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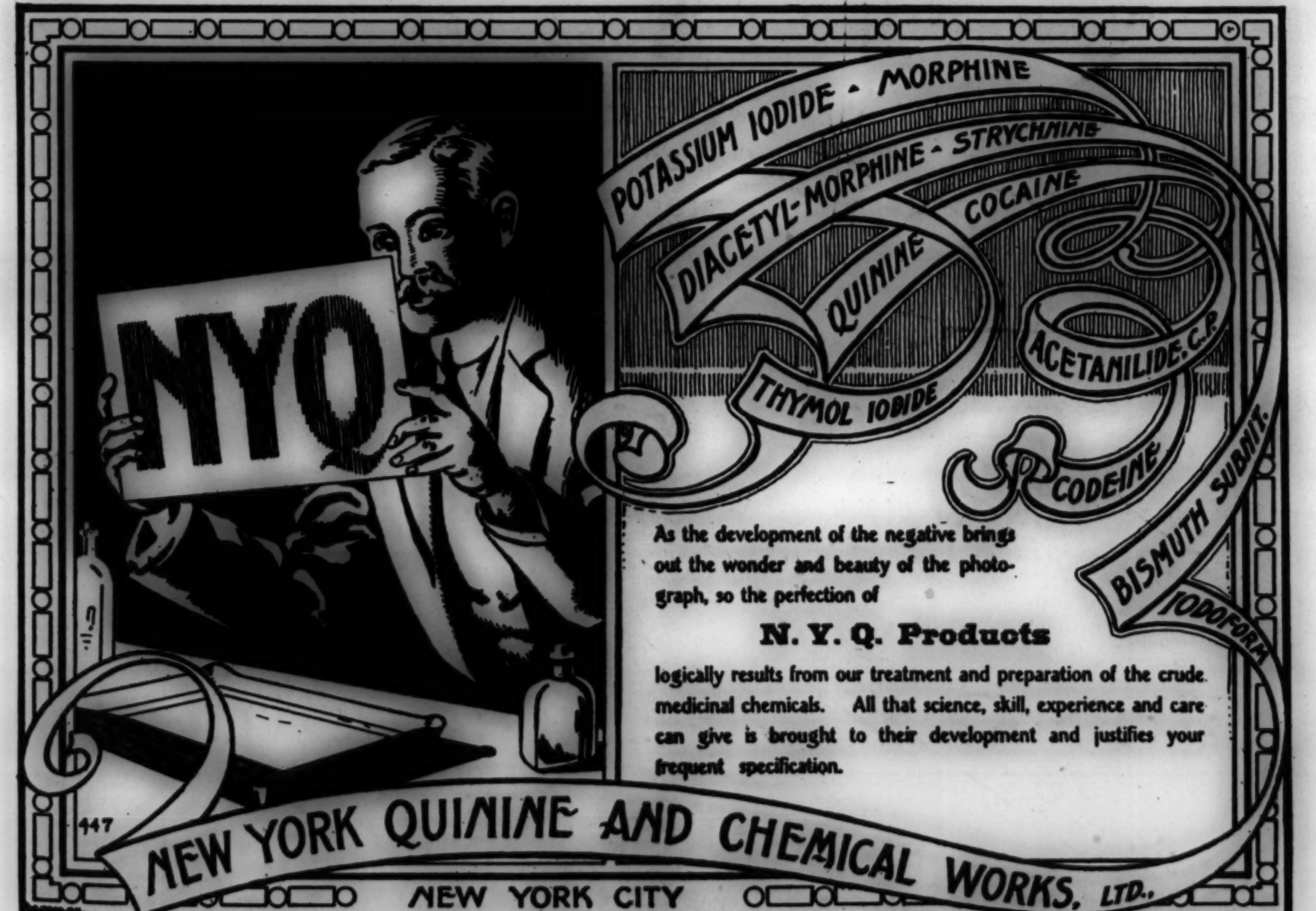

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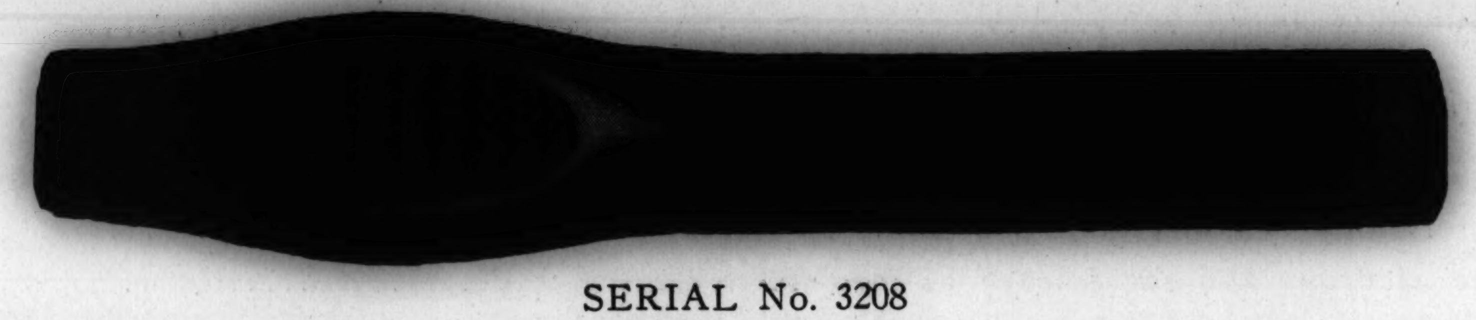

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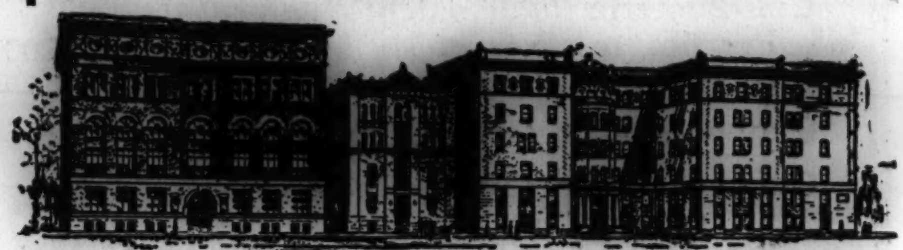

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EDITORIALS

THE NASHVILLE MEETING OF THE A. PH. A.

The Nashville meeting of the American Pharmaceutical Association was a success as are all meetings of this organization. It is true, the temperature was too high for comfort but not so high as to interfere with business. Most of the old guard were there, familiar among them Remington, the Casparis (father and son), Whelpley, Rusby, Diehl, Mayo, Arny, Beringer, Kebler, Wilbert, and many others. Prof. Ruddimann of Vanderbilt University assumed the responsibility of providing entertainment for the delegates and he did his duty well. The newly created House of Delegates will be in full working order in another year or two. It will facilitate the work of the general sessions of the A. Ph. A. very much and will serve to bind the interests of the delegates and will make it possible for the delegates to get a better hearing and better recognition; that is, after the House is a little better organized and more firmly established.

The sessions were well attended and occasionally much enthusiasm was manifest. One condition is, however, becoming more and more evident, and that is, the lack of time to present all papers in full and the failure of the chairmen of the various sections to make a fair apportionment of the time available. As it is, one or two persons take up all of the time under the plea that their particular papers are of such a nature that they cannot be abbreviated or that the subject is of **"vital importance."** Any paper or report can be presented in abstract and all contributors should receive equal consideration. It is manifestly unfair to permit one contributor to literally "saw the air" for nearly three hours, even though said contributor is convinced in his own mind that the matter which he is presenting is of the greatest importance; thus making it absolutely necessary to read some ten or more really interesting papers by title. Contributors should realize that the delegates do not care to listen to a paper which requires more than ten minutes in the reading. Cut it short. Present an abstract. Remember that there are others who came all the way from home to present papers. In plain words, show a little consideration for your neighbor.

The National Association of Boards of Pharmacy displayed the usual activity. We wish to state that this organization which meets with the A. Ph. A., is doing good work and is making good progress. Mighty efforts are being made to bring about a unification of board examinations and a unification of admission to board examinations. Furthermore, a National Board of Pharmacy, whose certificate shall be recognized by all of the states, is a possibility.

One of the best and at the same time wholly spontaneous eulogies on the A. Ph. A. meetings was pronounced by Dr. Bernard Fantus of Chicago, a long time member of the American Medical Association, and who stated that the Nashville meeting was the first meeting of the A. Ph. A. he had attended. He expressed agreeable surprise at the high type of men that make up the rank and file of the A. Ph. A. and the harmony which pervaded the meeting, hinting at but not expressing a contrast with an organization which we shall not name.

LONG LIVE THE AMERICAN PHARMACEUTICAL ASSOCIATION.

THE AMERICAN CONFERENCE OF PHARMACEUTICAL FACULTIES. This is the sister organization to the National Association of Boards of Pharmacy and meets at the same time and place as the A. Ph. A. Prof. Albert H. Clark of the College of Pharmacy of the University of Illinois made some very good recommendations in his presidential address, among other things urging a unification of courses of instruction in colleges of pharmacy. The Conference decided that for the minimum college requirements as now recognized by the Conference, the degree of Ph. G. shall be conferred. This is the first step toward the unification of college of pharmacy degrees. It was recommended that for the Doctor of Pharmacy degree, the minimum entrance to the college of pharmacy shall be High School graduation or its educational equivalent. This recommendation was proposed by Dr. McGill of Vanderbilt University and carried with but one or two dissenting votes. While it is true that the recommendation was merely approved it is nevertheless an indication of the trend of progress in pharmaceutical education. The three-year course (of 500 hours of instruction for each year) proposed by Dr. H. H. Rusby of the New York College of Pharmacy, was almost unanimously voted down.

While there was no very decided step in advance there was sufficient indication that the Conference will make some very marked progress in the near future. The conference can take almost any advance step if there is unanimity of action. Without such unanimity there can be no progress, either now or later. A recommendation that the Conference approve of the incorporation of the Syllabus Committee was voted down. The work of the Syllabus Committee is progressing and a number of the parts are pronounced complete and ready for the printer. There is some criticism in regard to the details of the courses as outlined in the Syllabus. We believe that there should be a harmonious adjustment of the qualifications of the faculty in Colleges of Pharmacy, the college equipment, and the curricula of studies. No real good can come from the adoption of any syllabus, of course, if the other two requirements are not properly co-ordinated.

THE LLOYD METHOD OF EXTRACTING ALKALOIDS.

The most interesting thing that we witnessed at the Nashville meeting of the American Pharmaceutical Association was a demonstration of a new method of extracting alkaloids from plants by John Uri Lloyd, the well-known author and scientist. Professor Lloyd found that certain substances have a marked affinity for alkaloids in solution. Fuller's earth possesses this property to a high degree. The Lloyd method is simplicity itself. The alkaloidal drug is exhausted with acidulated water as long as may be desired or required, whereupon a definite amount of the prepared Fuller's earth is added to the filtered solution. Immediately the alkaloids in solution are taken up by the earth. So complete is the taking up of the alkaloids that the filtrate gives no reaction with Mayer's reagent. This taking up of the alkaloid by the earth is instantaneous and instantaneously complete. Afterwards the alkaloids are removed from the Fuller's earth by means of the useful alkaloidal solvents, as ether, etc. More remarkable still, the alkaloids thus obtained are tasteless, thus we have tasteless strychnine and tasteless quinine and tasteless morphine. Even the merest novice in pharmacy and in medicine can see that this discovery will revolutionize the methods of extracting alkaloids, the methods of alkaloidal assaying and the methods of the administering alkaloids in the treatment of disease. It seems to us the greatest discovery of the age in chemical science. The discoverer is certainly to be congratulated.

In connection with this particular discovery it may be mentioned that it has been known for a long time that certain substances, as charcoal, for example, have a special affinity for coloring matter, which is also true of Fuller's earth. Fred West of the U. S. Treasury Department has made a series of experiments with Fuller's earth in removing the coloring matter from oils with very remarkable results. These are evidently matters which belong to the little understood domain of physical chemistry and undoubtedly has to do with the behavior of chemical solutions, colloidal solutions and suspensions and suspensions proper.

Dr. Bernard Fantus of Chicago has made some experiments with the tasteless alkaloids of Lloyd, making up candied alkaloidal tablets and pills for children and others who object to disagreeable tastes. The Lloyd alkaloids are rendered soluble as soon as they enter the intestinal tract where the reaction is alkaline. In fact the taste is developed in the mouth (where the reaction is also alkaline) if the substance is held there for a time.

THE PERUNA FRAUD.

Columbus, Ohio, is the home of the great American Peruna Fraud. During our recent visit to that city we had an opportunity of seeing something of the immensity of the Peruna enterprise. We made a visit to the Hartmann Farms, thousands of acres in extent. Then there is Mr. Hartmann's private car line connecting the several departments of the farm with the city street railway system. This private street railway is also for the accommodation of the numerous visitors to the Hartmann properties. We visited the modern dairying establishment, the chicken ranch, the numerous barns, etc. We were surprised at the amount of money invested and the ship-shape order in which everything was kept. We envied the man that could do these things, that had the financial resources to do things as they should be done. We were next shown the large theater built by this same Mr. Hartmann. We saw the handsome Hartmann livery stables and again we marveled. We marveled at the large artistically constructed factory where the Peruna has its being. We were told of the six-team delivery wagons that hauled the Peruna to the freight depot. By the merest accident we had the pleasure of meeting Mr. Hartmann himself, a jovial, kindly disposed old gentleman, of sturdy Pennsylvania Dutch (German) stock. He at once made us feel welcome and saw to it that everything was shown us. He told us a few interesting stories illustrating old fashioned common sense and modernism, the joke in all cases being at the expense of the modernism, bade us a cordial welcome and sped away in his handsome private car.

Surely the man that builded the theater, the handsome livery stable which is really a thing of beauty in the city of Columbus, the private street railway, the private roads (both for the use of the public), and who donates lavishly to charitable institutions, is certainly a public-spirited citizen and a benefactor to the human race. At least so it must appear to the casual observer. It *is* a noble thing to give freely. But what are the facts in the case? Mr. Hartmann *is* the proprietor and sole owner of Peruna and Ka-Tar-No. Mr. Hartmann *has* done the things above set forth. From the profits from the sales of Peruna he has been enabled to do the things indicated, mind, merely from the profits of such sales. How many bottles had to be sold before there could be sufficient gain to do these things? We give it up. How many millions of dollars does the enterprise represent? How many women have consumed the stuff (cheap grade of whiskey sold at a high price) believing it to be real medicine, and how many of these women have acquired the alcohol habit as a result of the use of this so-called medicine? How many men have gotten the Peruna habit as a substitute for the ordinary whiskey habit? We have in mind the good church deacon who regularly got his bottle of Peruna at the drug store every Sunday morning and at each purchase he had a new praise for the wonderful medicine. Finally, when the good deacon died, the drayman hauled away several loads of empty Peruna bottles found in a store-room of the deacon's home. Think of the money wasted by the deacon? He should have gotten his whiskey from a regular liquor dealer, in barrel lots, and thus saved money which his family needed. We do not blame Mr. Hartmann for manufacturing and selling whiskey. That is a privilege which the law and society grants him. We do blame him for selling a cheap grade of whiskey under the guise of medicine, charging therefor a high price and claiming therefor medicinal properties which it does not possess. We imagine that the jovial Hartmann will have a most unpleasant half hour when he arrives at the Golden Gate and St. Peter begins to question him about his Peruna transactions.

"BLENDED BOMBAY AND PENANG MACE." Ever since the enactment of the Pure Food and Drugs Act the crooks of the land have been unusually busy studying out schemes to circumvent the law and to escape just punishment *via* slippery evasion of the spirit as well as the letter of the law. The spirit of the law says the label must tell the truth. This requirement at first stumped our crooks, but only for a moment. They very soon learned, for example, that it was the simplest thing on earth to import large quantities of olive pits, mallow leaves, poke root, false sennas, false horehound, bombay mace, substandard drugs and spices of all kinds, drug refuse material of all kinds, etc., etc., all properly labeled. The law justly permits the importation of all kinds of substances, so long as they are correctly labeled and so long as they are not injurious to health. To this requirement the crooks conform, but the aspect is changed as soon as the goods leave the customs officials and the inspection service of the Bureau of Chemistry of the Department of Agriculture. Many of the articles named are imported for the sole purpose of adulteration, that and nothing more. For example, the crooked importer takes the imported poke root and adds it to belladonna root, perhaps to the amount of 25 or 30%, and sells it for belladonna root U. S. P., under his guarantee, of course knowingly taking a chance of detection, but the risk in this regard is not great inasmuch as the interstate enforcement of the Federal law is inefficient and the state (intrastate) laws as a rule not enforced at all or are at best very laxly enforced. Again, it has been found that such articles as olive pits, mallow leaves, bombay mace, imported under the correct label reappear as adulterants of spices, leaf drugs and spices and blended maces respectively. These are plainly criminal acts, even though the perpetrators of said criminal acts are not punished, as a rule.

A good example of the brazen work of the crooks is the unblushing marketing of "Blended Bombay and Penang Mace," composed of about 80 to 90% of Bombay or Wild Mace and the rest some variety of true mace. The Department of Agriculture admits its inability to reach this form of crookedness, for what reason is not clear to us. It is a very clear case of adulteration as well as misbranding. Bombay mace never has been recognized as a marketable and usable spice or drug and its appearance in the market has always been recognized as a form of adulteration and nothing more. Bombay mace is no more a spice or a drug than is so much sawdust or sand. Bombay mace mixed with true mace is not a blend. To form a blend the substances must be similar in kind, as two or more varieties of wheat, two or more varieties of wine, of whisky, of corn, etc. To make a blend, the several components must not only be closely similar as to origin (phylogenesis), but also closely similar as to intended use. For example, it would certainly be incorrect to designate a mixture of the garden turnip and the woody roots of the wild growing (Verwilderte) field turnip, as a blend. The two plants are of the same species and variety but in the one case the root is edible and in the other the root is wholly inedible. Certainly no judge would designate such a mixture as a blend. In the case of the two maces above referred to, the differences are much more pronounced. Bombay mace and the Penang mace represent two distinct species, the one wholly useless as a spice and the other a distinctive and well recognized spice. We are interested to know what manner of judge pronounced the mixture a blend permissible under the law. WE are certain that a judge with only the rudiments of the knowledge of drugs and medicines would not have made such a mistake.

The Department of Agriculture is endeavoring to correct the harm being done by the faulty interpretation of the law as it applies to mace, by sending out a warning to housewives against the purchase of "mace blends." This is indeed good advice. The taste and odor tests recommended by the Department of Agriculture are very satisfactory. We would recommend the following additional test: Place a pinch of the suspected "blend" on a white porcelain dish and add a drop or two of a 10 per cent. solution of sodic hydrate. If Bombay mace is present the mass will turn deep reddish brown. If it is pure mace there is very little change in color. This color test is very simple and reliable.

TOBACCO IMPORTS INTO CHINA. American tobacco is now being imported into China in enormous quantities. This we expected. About one year ago we had something to say in the editorial pages of this journal about the doings of the American and British tobacco trusts in China. These two trusts have now accomplished what they set out to do, namely, teaching the Chinese to use tobacco instead of opium. We should not be surprised in the least if these two trusts should apply for gold medals for deeds of philanthropy, for have they not been instrumental in ridding China of the terrible opium habit, to which she was slave for many years? To bring this about did the two trusts not distribute enormous quantities of cigarettes free, to the men, women and children of China? This must certainly be philanthropy of the most unselfish kind. Of course we cannot blame these trusts for doing this bit of philanthropy at a time when the Chinese as a nation were just succeeding in breaking away from the opium habit, the true psychological moment, the psychological moment from the standpoint of making it easy to introduce another habit, as we explained some time ago.

The tobacco trusts are now beginning to reap the reward of their unselfish giving of cigarettes, and the time and money spent in teaching the ignorant Chinese the use of tobacco, as evidenced by the large shipments of tobacco into China.

STANDARDIZED TOBACCO. Everyone knows that the habitual use of tobacco is injurious to health. Everyone is also ready to admit that it is, for the time being at least, impossible to do away with the habitual use of tobacco. The opposition to the discontinuance of the use of tobacco would be so great as to precipitate a most serious social conflict. That the use of tobacco is not an absolute necessity is, however, evident from the facts that there are a large number of really healthy and otherwise normal men who do not use the poisonous weed and also from the fact that the great majority of women do not use it. However, admitting for the time being that the use of tobacco is a necessity, we wish to submit some suggestions on ways and means for minimizing the evil effects resulting from the use of the drug.

As is known, the alkaloidal percentage of tobacco varies very much. The alkaloidal content of the leaves varies between 0.30% and 10%, certainly a very wide range. Apparently tobacco is used for two main reasons, to get the stimulating effects and for the flavor and aroma. Everyone is familiar with the toxic effects of tobacco as may be seen from the effects it produces in those who use it for the first time. Gradually the user becomes accustomed to the alkaloids and the alarming systems of poisoning gradually disappear, or rather they no longer manifest themselves. These first toxic symptoms vary in severity with the constitution of the user and with the alkaloidal content of the variety or brand of tobacco first attempted. Now, nicotine, the alkaloid of tobacco, is one of the most poisonous substances known and the toxic manifestations are not in the least surprising to those familiar with the subject of toxicology. So highly poisonous is this alkaloid that the use of even the mildest brand of tobacco (with less than 0.50% of alkaloid) will produce alarming symptoms in those not accustomed to it.

It is highly probable that a series of scientific tests would show that an optimum or rather a satisfying stimulating effect from the smoking of one cigar or one pipeful of smoking tobacco would follow the use of a brand of tobacco having 0.20% of alkaloids. That is, that amount of nicotine in tobacco would produce the desired stimulating effects without any of the markedly toxic symptoms in those who use tobacco. Thus the habit could be acquired without marked ill effects and its continued use would have no more evil effects than those of coffee or of tea, perhaps even less. We would, therefore, suggest that all tobaccos intended for habitual use be standardized so that the total alkaloids present should not exceed 0.20%.

This could no doubt be done very readily. The free nicotine thus obtained could be used in the manufacture of artificial tobaccos, by mixing the free nicotine with some inert vegetable, as is in fact done now by the Chinese. Whether this artificial tobacco could be given a satisfactory tobacco flavor would have to be determined experimentally. A San Francisco tobacconist declares that it is possible to standardize tobacco in the manner above suggested and at the same time retain the natural flavor and even to improve the natural flavor.

The use of tobacco standardized as above suggested would have the following effects:

1. Prevent the alarming toxic symptoms in those who are "learning to use tobacco."

2. Reduce to a minimum the evil effects resulting from the habitual use of tobacco.

3. The habit acquired from the use of the standardized tobacco would never become as firmly rooted as the addiction to the use of strong tobacco. Later, the question of the complete eradication of the habitual use of tobacco could be taken up with better hope of meeting with success.

4. The principal objectors to the proposed standardization of tobacco would be the users of the strong or rank tobaccos, that is those who have gradually acquired a taste for and an adaptation to those brands of tobacco having a high percentage of nicotine. These "tobacco soaks" would, however, all be gone in one generation, after which there would be no more objectors, because the standardized tobacco would meet the requirements of the user.

We feel that the introduction of standardized tobacco into those countries that are acquiring or about to acquire the habit, as for example, China, would be of the greatest value to such people. It appears, thanks to the effort of the American and British tobacco trusts, that the Chinese are bound to become general users of tobacco. The only thing that can be done now is to prevent, as much as possible, the ill effects which inevitably follow the general habitual use of tobacco.

WHAT IS ICE CREAM?*

"What is Ice Cream?" is a question that might well be asked during the summer months. As used in this country the term includes many products which are generally known as ices.

An investigation into the chemical composition of ice cream would indicate that a standard of ice cream must be established. From a commercial point of view, ice cream should contain, at least, 14 per cent. of fat. The special fruit ice creams should contain at least 12 per cent. of fat. This standard is not high in view of the fact that the federal standard for fat in cream, in so far as Interstate Commerce is concerned, is 18 per cent.

Eggs, gelatin, starch and other substances should not be found in the ordinary ice cream of commerce. Taking ice cream to be a product of cream and sugar with a natural flavor, it becomes patent that the sanitary aspects of the ice cream become of importance. Cream itself contains a large number of micro-organisms which are not destroyed in the processes of converting the cream into ice cream. General investigations of the bacteriological content of ice creams in Philadelphia, Washington, Boston, and New York have demonstrated that the ice creams commonly contain from two millions to five millions bacteria per cubic centimeter. In fact, twenty-five millions micro-organisms per cubic centimeter and above represent frequent indications of the lack of sanitary conditions in the manufacture of ice cream.

Municipalities have not been properly concerned in the unsanitary conditions surrounding the places of manufacture of ice cream. Unclean cellars, with the absence of proper light, with wretched ventilation, or with inadequate toilet facilities suggest the impossible conditions under which too much of our ice cream is made. It is impossible to secure a clean product in unsanitary cellars, where personal cleanliness is impossible and where the manufacture of ice cream in a cleanly way is impaired by the presence of old furniture, filthy matting, and unclean sinks, and foul toilets.

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* Medical Review of Reviews.

It is needless to state that the harmful pollution of ice cream is not all due to the unsanitary conditions of the ice cream manufacture. The first step in the production of wholesome ice cream demands the protection of the cream or milk which enters into its manufacture. The presence of streptococci or bacilli coli communis indicates that the source of pollution comes from cattle as well as from man.

Bacterial infection of this nature should be destroyed before any use is made of such contaminated food stuffs in the preparation of frozen products. The destruction of bacteria becomes more imperative when it is recalled that ice cream is used largely as a food by children and invalids whose susceptibility to infection is greater than the normal healthy adult. The various outbreaks of poisoning from ice cream with the nausea, vomiting, diarrhea, abdominal cramps, and general malaise bear loud testimony to the necessity of protecting the consuming public from the disease-breeding qualities of impure ice creams.

It has generally been regarded as a fact that the low temperature maintained during the storage of ice cream suffices to destroy the bacteria. The investigation by Stiles in Washington and Pennington in Philadelphia has shown that the bacterial content is not generally decreased by storage. The general tendency is to secure a decrease in the number of organisms which thrive with an optimum temperature of body heat. The decrease, however, is soon followed by a pronounced rise which indicates the importance of having a clean, low bacterial cream to begin with.

The toxicity of impure ice cream has been demonstrated in various epidemics due to the general consumption of contaminated ice cream. Ice cream has served to spread typhoid fever in addition to causing numerous other gastro-intestinal diseases.

In 1902 The London County Council established regulations for the control of the ice cream trade requiring that:

(a) Ice cream must be made and stored in sanitary premises.

(b) It must not be made or stored in living rooms.

(c) Strict precautions must be taken as to protection from contamination.

(d) Cases of infectious disease must be reported.

The ptomaines which are grouped under the general popular head of Tyrotoxicon are formed in impure creams particularly where the cheap grades of material are used. Such ptomaines are most likely to occur in the cheaper grades of ice creams where milk, eggs and thickeners as gelatin and glue are used so as to lessen the necessity of using a high standard cream.

It seems important at this time to call general attention to the necessity of labeling ice cream truthfully so that the consumer will be protected from adulterated articles consisting of other constituents than fresh cream, sugar and flavoring matters. The use of skimmed milk and condensed milk should not be permitted in the products which are advertised as frozen or iced creams.

In the interests of the public health (1) it is necessary to safeguard the production, handling and storage of the cream; (2) to demand clean, sanitary, well ventilated kitchens or establishments in which ice cream is made; (3) to provide for sanitary oversight of the ice cream industry; (4) to establish chemical and bacteriological standards for ice creams; (5) to secure the honest labeling of frozen products.

COMMUNICATIONS.

AN OUTLINE OF COURSES OF INSTRUCTION IN BOTANY, PHARMACOGNOSY, MATERIA MEDICA, PHYSIOLOGY, TOXICOLOGY AND BACTERIOLOGY IN COLLEGES OF PHARMACY.

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INTRODUCTION.

The instruction in colleges of pharmacy is generally given under three divisions, departments, heads or chairs, namely: (1) PHARMACY, (2) CHEMISTRY, and (3) BOTANY and PHARMACOGNOSY. The latter department usually includes the courses of instruction detailed in this outline. Bacteriology, the latest addition to the college of pharmacy curriculum, naturally falls to the department of botany. It is also quite natural that toxicology and human physiology should fall to the department having the courses in materia medica. The outline hereby submitted is therefore complete as to the courses which properly belong to the division of botany and pharmacognosy.

The outline includes both the didactic and the laboratory instruction, is given in full detail, and is intended to serve the following purposes:

First. Give the students in colleges of pharmacy a survey of the work that will be required of them in the departments named, covering the first, second and the third year studies.

Second. Make it possible for students to review their work and to do advance reading and studying during holidays, vacations or in other interims of college attendance.

Third. Make it possible for Boards of Pharmacy to get a better idea of the work done by candidates holding diplomas from colleges where such courses are obligatory.

Fourth. Enable instructors in the other departments of the college of pharmacy to get a better idea of the correlation of studies.

Fifth. Make it possible for other colleges and the American Conference of Pharmaceutical Faculties to ascertain more accurately the character of the work done at the particular college where the courses of instruction as herein outlined are adopted and carried out.

Sixth. It is intended that the outline shall serve as a means of bringing about a unification of curricula of studies in our college of pharmacy. To this end the courses outlined must, in a measure, represent the highest efficiency in the instruction as now given in our best colleges of pharmacy. It is believed that the outline fulfils this requirement.

In addition to the above, the outline will serve as a reminder to the instructor in charge and his assistants, of the proper sequence of study and instruction; of the materials, apparatus, books, etc., required; and will make it easy to add the changes which must be made in the courses of instruction in order that they may conform to the advance in pharmaceutical science. Teachers who do not keep abreast of the progress of science, through constant study and investigation, have no place in any institution of learning and are not qualified to direct the work of students.

A careful perusal of the outline will make it clear that the courses are specialized to meet the requirements of students in pharmacy and that the work can be carried out only in properly equipped colleges under qualified instructors. The work cannot be done by home reading nor can it be done wholly, or even in part, in other professional schools or colleges (as medical colleges, dental colleges) or in academic departments of high schools or of universities.

The prime object of education is to develop the mind and to aid in the acquisition of knowledge which will become a useful and at least a partially fixed possession of the individual. There is no quick road to learning and the ability to commit certain isolated facts to memory does not represent true learning.

The instruction now given in our leading American Colleges of pharmacy represents the minimum effort required to teach the merest essentials to practice pharmacy and any and all shorter quizz or cram courses, primarily intended to prepare for state board examination, are wholly unsatisfactory and cannot be too strongly disapproved. Correspondence and quizz courses are indeed more or less valuable as adjuncts or supplements to the college course but they cannot be substitutes therefor, either wholly or in part.

Although the courses are outlined in detail it is not expected that the instructors in the several colleges of pharmacy will carry on the instruction in the same detail, sequence or order as here given. The outline is essentially suggestive in its significance. Nevertheless it is believed that the omission of details qualitatively or the omission of any one course, as herein outlined, means a weakening in the departmental instruction.

San Francisco, July, 1913.

CONTENTS.

First Year, Regular Course.

Microscopy and Micro-Technique.
General Botany.
Plant Histology—Laboratory Botany.
Supplementary Laboratory Botany.
Pharmaceutical Botany.
Human Anatomy and Physiology.

Second Year, Regular Course.

General Pharmacognosy.
Laboratory Pharmacognosy.
Materia Medica.
Toxicology.
Powdered Drugs—Laboratory Work.
General Pharmaceutical Bacteriology.
Urinary Sediment. (See also Third-Year Work.)

Third Year, Graduate Year.

Laboratory Bacteriology.
Microscopical Examination of Fiber, Foods and Drugs.
Microscopical Examination of Urinary Sediment, Pathological Discharges and Blood Counting.
Experimental Pharmacology.

SUPPLEMENTARY.

Botanical Excursions.
Industrial Visits.
Thesis Work.
Museum.
Library.
Student Associations.

PART I.—FIRST YEAR WORK.

(Regular two-year course.)

Microscopy and Micro-Technique.—A course of six to ten lectures, recitations and laboratory demonstrations, given at the beginning of the junior year. This coures is prepartory to the laboratory work in vegetable histology which follows immediately after.

MICROSCOPY AND MICRO-TECHNIQUE.

(1) MICROSCOPY.

Light and its Properties.
  Source of light. Intensity of light.
  Rate of motion. Light waves.
  Properties of the ray of light.
  Primary colors.
  Polarizing properties.
  Penetrability of light rays.
  Reflection of light.
Dispersion and diffusion of light.
  Mirrors—Plane, Spherical. Images formed.
Refraction of light.
  Refracting media.
  Media with parallel surfaces.
  Prisms, lenses.
Lenses.
  Kinds of glass used.
  Spherical and chromatic aberration.
  Correcting aberration.
  Simple lenses.
    Lenses of best form.
    Use of simple lenses.
    Forms of simple microscopes.
      Reading glasses.
      Folding magnifiers.
      Coddington lenses.
      Stanhope magnifiers.
      Prism tester.
      Watchmaker's glasses.
      Engraver's glasses.
      Aplanatic lenses.
      Dissecting microscopes.

- Compound Miscroscopes.
  - Historical.
  - The parts of the Compound Microscopes.
    - Mechanical parts or stand.
    - Optical parts.
      - Aberration—Spherical and Chromatic.
      - Lenses of Objective System.
      - Lenses of Ocular System.
      - Formation of images.
- Properties of the Compound Microscope.
  - Focal Distance. Working Distance.
  - Aperture or angle.
  - Penetrating Power.
  - Definition.
  - Resolving Power.
  - Magnifying Power.
  - Limits of magnification.
- Use and care of the Compound Microscope
  - Position of Instrument.
  - Illumination.
  - Focusing.
  - The use of the Eyes.
  - Care of the Instrument.
- Accessories.
  - Micrometer—stage and ocular.
  - Camera Lucidas.
  - Polarizer.
  - Counting Apparatus.
    - Hemacytometer. Construction and use.
    - Mold and spore Counter.
  - Slides and covers.

MICRO-TECHNIQUE.

- Micro-chemical reagents.
- Microtomes and Section knives.
- Making sections—Transverse, radial, tangential.
- Temporary Mounts.
  - Entire objects.
  - Needle preparations.
  - Crushed and powdered substances.
- Permanent Mounts.
  - Preparing material.
    - Dehydrating.
    - Clearing.
    - Infiltrating.
    - Sectioning.
    - Mounting.
  - Celloidin Method.
  - Paraffin Method.
  - Freezing Method.

THE ULTRA-MICROSCOPE OF ZSIGMONDY AND SIEDENTOPF.

- Optical Principles.
- Parabolic Condenser.
- Candioid.
- Limits of Vision.
- Practical Use.

THE NORMAL EYE, ITS USE AND CARE.

DEFECTIVE SIGHT — PREVENTION AND CORRECTION.

TEXT-BOOK—SCHNEIDER'S MICROSCOPY AND MICRO-TECHNIQUE.

General Botany.—A course of lectures and recitations, one hour each week during the first half of the first or junior year. This course is preparatory to the laboratory work in botany as well as to the field excursions and to the course in special Pharmacognostical Botany given during the second half of the junior year. The main facts of scientific botany are set forth, always with special reference to the later work in pharmacognosy and in materia medica.

While there is no required text-book for this course, the student is strongly urged to read some of the standard High School and College text-books on botany as those by Kraemer, Bessey, Barnes, Strassburger, Westermaier and others, as may be advised by the instructor in charge.

BOTANY.

INTRODUCTION.

- General Divisions.
  - Historical.
  - Relationship to Zoology, Chemistry and Physics.
  - Divisions of Botany.
    - Morphology, Teratology.
      - Gross Morphology or Organography.
      - Microscopical Morphology or Histology. Cytology.
    - Embryology.
    - Physiology.
    - Genetic.
      - Phylogenesis.
      - Ontogenesis.
    - Taxonomy.
      - Terminology. Nomenclature.
      - Synonomy.
      - Systems of Classification.
    - Plant Ecology. Environmental Botany.
    - Geographical Botany. Plant Distribution.
    - Plant Pathology.
      - Causative.
      - Curative.
      - Preventive.
    - Paleontologic Botany.
    - Applied Botany. Economic Botany.
      - Agriculture.
      - Horticulture.
      - Gardening. Landscape.
        - Esthetic.
        - Utilitarian or Economic.
      - Medical and Pharmacal.
        - Materia Medica.
        - Pharmacognosy. Pharmacography.
        - Toxicology.

    - Drug Plant Culture.
    - Commercial.
  - Forestry.
- Ethnobotany.
- Historical.
- Educational.
- Herbaria.

BOTANISTS.

- Scientific Classification.
- Scientific Botanists.
  - Morphologists.
  - Histologists.
  - Physiologists.
  - Cytologists.
  - Embryologists.
  - Pathologists.
  - Phyto-chemists.
  - Pharmacognosists.
  - Toxicologists.
- Systematists.
  - Collectors. Herbalists. Rhizotomists.
    - Herbarists.
  - Algologists.
  - Fungologists.
  - Bryologists.
  - Lichenologists.
  - Etc.
- Practical Classification.
  - Culturists.
  - Explorers. Surveyors.
  - Gardeners.
  - Truck Gardeners.
  - Florists.
  - Pharmaceutical Botanists.
  - Medical Botanists.
  - Foresters.
  - Commercial Botanists.
  - Etc.
- Ethical Classification.

I. THE VEGETABLE CELL.

- Introduction.
  - Definition of cell.
  - The cell not the ultimate **unit** of structure. "Phytomers" Cell theories.
  - Plasm—(Protoplasm, cytoplasm.)
    - Chemical composition C,H,O,N, and P,S.
    - Chemical properties. Very unstable.
    - Physical properties. Plasmolysis. Turgor.
    - Isotonic Coefficients. Imbibition pressure, 40 atmospheres.
    - Hyaloplasm and polioplasm. Structure.
    - Transmission of Hereditary properties.
    - Pangenesis of Darwin. Pangenes or gemmules.
    - Plasmic movements.
    - Streaming movements in the cytoplasm in the trichomes of the tomato plant (Lycopersicum esculentum).
    - A study of the movements of the amoeba.
    - Imitation of streaming and amoeboid motion.
      1. Solution "A."—A ten per cent. solution of gum camphor in benzol, colored with Scharlachroth, dropped on water. Imitation of amoeboid motion.
      2. One part of Solution "A" thoroughly mixed with 25 parts olive oil, dropped on water—Amoeboid and streaming motion.
      3. One part of solution "A" with 50 parts olive oil shows slow streaming motion only.
- Cell contents.
  - Living, plasmic contents.
    - Cytoplasm (Plasomes and microsomes).
    - Nucleus—Structure and position.
    - Nucleoli—Structure, distribution.
    - Directive spheres or centrosomes.
  - Chromatin. Achromatin.
  - Nuclear spindle. (Microscopical examination of slides showing karyokinetic figures in the dividing cells of onion root tips.)
    - Plastids.
    - Chromoplastids.
    - Chloroplastids or Chlorophyll grains.
      - Structure and position in the cell.
      - Form and function.
      - Yellow plastids. Form and occurrence.
    - Amyloplastids. Structure and growth.
    - Leucoplastids. Relationship to Chromoplastids and to amyloplastids, particularly to the chloroplastids.
- Cell Division.—Nuclear Division—Mitosis karyokinesis.
  - Dead Cell—contents.
    - Aleuron (proteid) granules.
    - Globoids, crystalloids and crystals.
    - Fat crystals.
    - Calcium ocalate. Forms of crystals.
    - Silica (Si°2).
    - Mucilages, gums, resins.
    - Oils (fixed and volatile) tannins, inulin, coloring substances, sugars, acids, Benzoic acid, phenol, phloroglucin, etc.
    - Alkaloids, glucosides, active principles. Oleoresins, resins.
    - Enzymes. Catalytic Agents. Hormones.
    - Cell—Sap. Vacuoles.
    - Water. Air.
- Cell-wall Composition.
  - Growth and molecular structure.
  - Cuticularization—Cutin.
  - Suberization—Suberin.
  - Lignification—Lignin.
  - Mucilaginous modifications.
  - Formation of coloring substances.
    - Santalin, haematoxylon, etc.
  - Size and form, thickness.
- Continuity of Cell Plasm. Cell pores.

III. TISSUES AND ORGANS.

- Definition of tissue and organ.
  - Aggregation of cells similar in form and function constitutes a tissue.
  - A portion of a cell, a cell, an aggregation of cells or tissues performing definite work or a distinctive function constitutes an organ.
- Classification of tissue according to function.
  - Formative tissues.
    - Meristem—Apical areas.
      - Dermatogen.
      - Plerome.
      - Periblem.
    - Cambium—Relationship to bark and wood in exogens.
    - Endogenous growth—Corn, palm.
    - Relationship of growth to cell division.
    - Cell division without growth.
  - Epidermal tissues.
    - Epidermis, Protecting function, etc.
    - Normal epidermal cells (cuticle).
    - Stomata (guard cells).
    - Waxy and other deposits.
    - Cell-contents and cell function.
    - Trichomes or hair-cells.
      - Single-celled.
      - Simple, many-celled.
      - Branching.
      - Glandular.
      - Special forms.
      - Emergences.
    - Cork tissue—Phellogen—cork cells.
    - Lenticels—Relationship to stomata.
    - Scar tissue—Falling of leaves. Scission layer.
    - Hypodermal tissues.
    - Mechanical tissues.
      - Structure or arrangement.
        - Solid cylinder: — Tree trunks; roots; branches.
        - Hollow cylinder:—Girth and filling, Stems, as culms of grass.
        - Function—Mechanical support.
        - Decrease in firmness in acropetal direction in stems and in branches and in roots.
    - Principal mechanical tissues.
      - Bast—Mechanical strength.
      - Collenchyma, position.
      - Wood cells.
      - Ducts.
      - Tracheids.
    - Conducting tissues.
      - Sieve tubes and conducting cells.
      - Vessels or ducts, porous, scalariform, reticulate, spiral, annular—Genetic relationship.
      - Medullary Ray tissue—storing function.
      - Laticiferous ducts—two forms.
      - Function of laticiferous fluid.
      - Types of vascular bundles—closed collateral, closed bi-collateral, radial, solid. The stele.
      - Primitive type in mosses. Ferns; monocotyls, dicotyls.
    - Protecting tissues.
      - Root cap.
      - Stem apex, apical areas, scales, position of apex as in ferns.
    - Assimilating tissues.
      - Palisade tissue of leaves, Chlorophyll.
      - Spongy tissue—Relationship of structure to function.
    - Acrating tissue.
      - Stomata or breathing pores.
        - Structure and mechanism.
        - Position and function.
      - Lenticels.
      - Air chambers and air passages.
    - Tissue of absorption.
      - Root hairs.
      - Aerial roots.
      - Scutellum.
      - Cells and tissues as of saprophytes, parasites, insectivorous plants, etc.; haustoria of fungi, mosses, liverworts, etc.
    - Storage tissues.
      - Storing of water—Desert plants,—epidermal cells, storage tissue, etc.
      - Storing of food substances, as starch, sugar, inulin, proteids, amylodextrin, etc.
    - Secreting and Excreting tissues. Distribution.
      - Glands—Structure and function.
      - Ducts—Structure and function.
      - Glandular trichomes.
      - Nectaries of flowers.

IV. REPRODUCTION.

- Forms of reproduction among Algae.
  - Desmidiaceae.—Cell Division, Conjugation (Auxospores).
  - Protococcoideae.—Cell Division. Union of swarming Gametes.
  - Confervoideae.
    - Asexual Reproduction. Free Swarmspores.
    - Sexual Reproduction. Antherids and Oogonia.
  - Characeae and Vaucheriaceae.
- Forms of Reproduction among Fungi.
  - Schizomycetes (Bacteria). Septation, spore formation.
  - Zygomycetes and Oomycetes. Zygotes. zygospores.
  - Ascomytes and Basidiomycetes.
  - Lichenes.
- Alteration of Generation.
  - Gametophytic Generation (Gametophyte).
    - Sexual Generation.
    - Prothallium.
    - Antheridia and Oogonia.
  - Sporophytic Generation (Sporophyte).
    - Asexual Generation.

Sporogonium.
Heterosporous.
Homosporous.

V. ALTERNATION ON GENERATION IN MOSSES, VASCULAR CRYPTOGAMS AND PHANEROGAMS.

Mosses and Liverworts—Musci and Hepatici.
  The Gametophyte—Sexual Generation.
    The Vegetative Portion Thallome and Rhizoids.
    Analogy to Roots, Stems and Leaves, of Higher Plants.
    The Reproductive Portion—Antheridia, Archegonia.
The Sporophyte—Asexual Generation.
  Stalk, Sporogonium, Spores.
Vascular Cryptogams—Ferns.
  The Gametophyte.
    Prothahillium—Male and Female.
    Archegonia, Antheridia.
The Sporophyte—Plant Proper.
  Leaves, Sterile and Fertile.
  Microspores—Macrospores.
Phanerogams—Gymosperms, Angiosperms.
  The Gametophyte—Where is it and by what represented?
  The Sporophyte—The plant proper, inclusive of seeds.
The Flower of the Gymnosperms and Angiosperms.
  Phylogenesis of the flower and floral parts.
  Floral Types.
    Pine—Male and Female Cones.
    Grasses—Absence of Calyx and Corolla.
    Hyacinth—One Floral covering.
    Cherry—"Perfect Flower."
Floral Parts, their mutual Relationship and arrangement.
  Calyx, Corolla, Nectaries, Stamens, Pistils.
  Cyclic Flowers. Whorled arrangement of parts.
  Acyclic Flowers. Spiral arrangement of parts.
  Hemicyclic Flower. Spiral and Whorls.
  Polysymmetrical or Actinomorphic Flowers.
  Zygomorphic or Symmentrical Flowers.
  Azygomorphic Flowers.
  Monoecious Flowers. Corn. Birch.
  Dioecious Flowers. Pine. Willow.
  Perfect Flowers. Most Flowers.
The Androecium and Gynoecium.
  The Germination of the Pollen-grain.
  The Embryo-sac.
    Egg-cell, Synergidae, Antipodal cells.

VI. POLLINATION OF FLOWERS.

I. Introductory.
  1. Definition of pollination, close or self-pollination and cross-pollination.
  2. Occurrence of pollination—Phanerogams, Divisions.
  3. The flower and its parts; compare to branch and its parts.
    a, Calyx; b, carolla; c, stamens; d, pistils; e, ovary.
  4. Process of pollination; close or self-pollination and cross-pollination.
  5. Process of fertilzation.
  6. Floral adaptations, remote and close. (Relationship of form of flowers and form and habit of animals.)
II. Close or self-pollination comparatively rare.
  1. Cleistogamy—Viola. Two kind of flowers, large and small; the latter occurring late in season among leaves near soil.
  2. Close pollination and cross-pollination as in wheat, barley, **Canna**, and **Viola**, also **Linum.**
III. Cross-Pollination. Means of bringing it about. Chasmogamy.
  1. Monoecie.—Corn. Advantages and relationship to perfect flowers.
  2. Dioecie—Hemp. Advantages of monoecie, saving of material.
  3. Dichogamy—To insure cross-pollination.
    a. Protandry—Stamens mature first; most common. Geraniaceae, Campanulaceae, Compositae, Lobelia. Umbelliferae, Malvaceae, Epilobium, Digitalis.
    b. Protogyny—Less common. Pistils mature first, rare, Arum, Birthwort, Scrophularia nodosa, Plantago, Magnolia, Helleborus, and others.
  4. Heterostyly—Uneven length of stamens and pistils.
    a. Dimorphism—Primula, Pulmonaria, Linum. Houttonia. Fagopyrum. (Figure of Primula flower.)
    b. Trimorphism—Lythrum, Salicaria, Oxalis.
  5. Herkogamy — Self-pollination made impossible by the form of the floral organs, as stamens and pistils. Iris, anther below the corolla-like pistil. Orchids and Asclepias, dependent upon the nature of pollen-grains as well as the position of the anthers. **Salvia patensis,** pollen-anther covered by corolla leaf (shield) while pistil projects beyond. (Illustrate by figure.)
  6. Anemophilous flowers.
    a. Inconspicuous.
    b. Anthers large because a large quantity of pollen is required, and so arranged that they may be acted upon by the wind, as catkins staminate of willows and poplars and the pendulous anthers of the Gramineae.

c. Pollen-grains dry and stigma more sticky and other special arrangements for catching or incepting flying pollen-grains, long fringe-like projections of stigma, or long styles.

d. Special appendages of pollen-grains (exine) to make distribution by wind easy, as in pines.

e. Clouds of pollen from conifers; the so-called "rain of sulphur" in pine forests of Austria. Abundance of pollen in Gramineae (corn), Poplars, Hop, Birches, Oaks, Sedges, Walnuts.

7. Hydrophilous flowers. Rare. flowering plants.

a. Zostera with long filamentous pollen of the same sp. g. as water and easily moved by water currents and brought to the pistil.

b. **Vallisneria** spiralis—pollination at the surface of water. Pistillate flowers open at the surface, Staminate flowers separate from stem, rise to surface and float to pistillate flowers. As soon as pollination is completed the pistallate flowers withdrawn below the surface again.

8. Entomophilous flowers—Most common.

a. Bees—Clover, sweet clover, kind of honey locust, etc.

b. Butterflies.

c. Moths. Night blooming Cereus (cactus).

d. Beetles—Stenches — **Welwitschia mirabilis.** Arum, Amorphophallus.

9. Ornithophilous flowers—Rare.

a. Alutilon—humming birds.

10. Malakophilous flowers (snail pollinated flowers)—Rare. Calla palustris, Aspidistra.

11. Prepotency of foreign pollen. Sterility of pollen upon stigma of the same plant. (Rye, Corydalis cava and some **Cruciferas**); that is pollen-tube will not develop.

12. Pollen of same plant may cause the death of the pistillate flower. (Some Orchids.)

13. Pollen may be killed by the secretion of the stigma.

14. Diclinism.

15. Pollinia—How used.

VII. THE FRUIT AND SEED.

The fruit, the ripened ovary.

Parts of the fruit.

Pericarp, exocarp, mesocarp, endocarp.

Placenta—central, lateral.

Seed or seeds. Parts of the seed. Kinds.

Raphe, Funiculus, Micropyle, Chalaza, Hilum.

Kinds of fruit.

Berry, drupe, pome, pod, achenium, nut, key fruit, etc.

False fruits and true fruits—Examples of each.

Edible and non-edible. Useful. Poisonous, etc.

Many seeded and few seeded fruits.

Means of distributing fruits.

Wind, water currents.

Animals (by eating).

Animals (by clinging to them), as bur, Commercial roots, etc.

The Seed.

Cotyledons—Seed leaves.

Polycotyledonous.

Monocotyledonous.

Dicotyledonous.

Kinds of cotyledons as to form.

Uses of cotyledons to plants.

Uses of cotyledons to Man.

Storage Substances.

Starch, proteids, enzymes.

Active constituents, oils, fats, etc.

Testa or Seed Coat.

Gross Morphology. Color. Use.

Histology—Epiderm. Hypoderm.

Caulicle (Radicle).

Plumule.

Embryo.

Kinds of Seeds.

Exalbuminous—No albumen outside of embryo.

Endalbuminous—With albumen outside.

Attachment and Position of Seeds in Capsule (Pericarp).

Dissemination and Germination.

Fruit and seed dissemination.

Protective tissues of fruits and seeds.

Protective cell contents of fruits and seeds.

Food substances of seeds.

Seed germination.

Changes in cells.

Changes in cell contents.

Proteids—Action of proteases.

Starches—Action of diastases.

Fats and oils—Action of lipases.

Viability of seeds.

Resting periods of seeds.

Shortening the resting period.

Hastening the germination of seeds.

Drying, exposure to light and wind.

Removing hard protective coats.

Hastening fermentative changes.

Special methods.

Patented methods.

VIII. THE CHEMISM AND PHYSICS OF PLANT LIFE.

The relative percentage of Water and Dry Substances.

The relative percentage of Ash and Volatile Elements.

- The Essential Elements—C, H, O, N—Fe, K, Ca, Mg, P, S.
- The Useful Elements—Na, Cl, Si (Iodine, Bromine).
- The source of the Elements.
  - C O H from CO_2 and H_2O. (Combustion and Decay.)
  - N from the Air and from Nitrates. The remaining elements from various binary and tertiary salts.
- The Products of Assimilation.
  - $6CO_2 + 5H_2O = C_6H_{10}O_5 + 12O$.
  - Engelmann's Bacterial Experiment.
- Products of Metabolism.
  - Starch, Cellulose, Albuminoids, Fats, etc., etc.
- Products of Catabolism.
  - Sugar, fatty acids (Products of Decomposition).
- Cell-growth. Relation of Turger to Growth.
  - Active and Passive Growth.
- Unequal Growth.
  - Tissue-Tensions and resulting Phenomena.
  - Curvatures and Torsions.
  - Epinasty and Hynonasty. Eccentric Pith.
- Temperature.
  - Rise and Fall of Temperature in Plants.
  - Effects of Temperature upon Plant-life.
- Light (Heliostat).
  - Luminous Plants (Bacteria).
  - Influence of Light upon Plant-life.
- Gravity (Clinostat).
- Electricity.
  - Influence on plant growth and on seed germination.
- Molecular Structures of Tissues and elements.
  - Naegeli's Micellar Theory. (Micellae.)
- Protoplasmic Structure.
- Chemical-mechanical theory regarding protoplasmic activities (Berthold).

IX. PLANT MOVEMENTS.

- Movements of Growth.
  - Heliotropism—Due to Light Influences. (Heliostat.)
    - Negative—Turning away from Light.
    - Positive—Turning toward the Light.
  - Geotropism—Due to Gravity. (Clinostat.)
    - Negative—Growing upward. Stem.
    - Positive—Growing downward. Root.
  - Plagiotropism—Horizontal Growth. (Dorsiventrality.)
    - Negative—Inclined upward. Most Branches.
    - Positive—Inclined downward. Cedar, etc.
  - Hyponasty—More rapid Growth on Lower side.
  - Epinasty—More rapid Growth on Upper side.
  - Hydrotropism—Due to Moisture.
    - Negative—Turning away from Moisture.
    - Positive—Turning toward Moisture.
  - Rheotropism—Due to Currents of Water.
    - Negative—Not well understood.
    - Positive—Roots of **Zea Mays.**
  - Thermotropism—Due to Changes in Temperature.
    - Negative—In Young Growing Plants.
    - Positive—In Young Growing Plants.
  - Galvanotropism—Due to Electrical Currents.
    - Negative and Positive—Negative and Positive Poles.
  - Nutation—True and False.
  - Circumnutation.
  - Twining—Due to Negative Geotropism and Circumnutation.
- Hygroscopic Movements—Due to Absorption or Loss of Water.
  - Opening of Sporangia, Movement of.
  - Guard-cells. Ejection of Seeds, Spores, etc.
- Irritable Movements—Due to Direct Stimuli.
  - Mimosa (Leguminosae)—Motile Organs (Pulvina)—"Sleeping and Waking" Movements.
  - Behavior of Tendrils.
  - Stamens of Cynareae, Hair-cells of Drosera, etc.
- Autonomous Movements.
  - Desmids, Euglena and other Algae, Diatoms.
  - Plasmic Movements (Tradescantia).
  - Heliotactile movements of Euglena.
- Mechanical Theory Explaining the Cause of All Movements.
  - Berthold and others.

X. PHYSIOLOGICAL BOTANY.

- Definition—Physiology **versus** Ecology.
- Relationship of structure to function.
- The more important experiments in plant physiology.
  - Root pressure—apparatus.
  - Stem presure.
  - Transpiration **versus** evaporation of moisture.
    - Causes modifying transpiration.
    - Apparatus to explain phenomena.
  - Gravity—Clinostat.
  - Light—Heliostat. Colored Lights. X-Rays.
  - Growth pressure.
- Plasmolysis, growth energy.
- Circulation of cell sap.—Growth energy, osmosis, capillarity, air pressure (temperature).
- Influence of anaesthetics on plant transpiration.
- Influence of magnetism and electricity on plant growth.

XI. VEGETABLE ECOLOGY—PLANT SOCIETIES—SURVIVALS—TENSION ZONES, ETC.

Geographical distribution.
  Latitudinal and Longitudinal, Tropics, Sub-tropics, Temperate, Frigid.
  Altitudinal range of plants.
Natural, wild or native plants.
Introduced or naturalized plants, spontaneous or accidental and intentional or artificial introduction of plants.
Political distribution of plants; National grouping with sub-divisions.
Natural Plant Societies.
  Mesophytes.
  Xerophytes.
  Hydrophytes.
  Sand dune vegetation.
  Valley, mesas, mountains, etc., etc.
Artificial Plant Societies.
  National, State, County, roadside, Coast, along railroad lines, caravan routes, marches of armies, etc., Invasions, Expeditions, Conquests, Migrations, etc.
The Age of Plants.
Theories of Creation.
  Theories of Evolution.
  Theory of Special Creation.
Evolutional. Adaptations, Survivals.

1. Struggle for Existence—Cause and effect.
2. Tension Zones. Growth. Special Organs.
3. Factors in Effecting Survival or Extinction.
   a. Roots, rhizomes, tubers, bulbs, etc.
   b. Leaves and leaf modifications.
   c. Stems. Acacias (phyllodes). Redwoods (thick bark and no resin).
   d. Seeds and fruits. Pollen, etc.
   e. Change in symbionts.
   f. Extinction of competitors.
   g. Climatic changes.
   h. Changes in soil and geologic formation.
   i. Geographic boundaries and barriers. (Lakes, streams, mountain chains.)
   j. Man's influence.
   k. Forest fires.
4. Some special adaptations.
   a. Dandelion. Sunflower. Composites.
   b. Bur clover, cocklebur, Spanish needle.
   c. Canada thistle, tumble-weed.
   d. Eucalyptus, poplar, sequoia, large trees.
   e. Fleabane—**Erigeron canadense.**
   f. Creepers and climbers. Dodder.
   g. Xerophytes. Hydrophytes. Agave. Cactus.
   h. Special causes—disappearance of enemies.

Artificial influences, climatic changes.
   i. High tension under which organisms are compelled to exist.

XII. HYBRIDIZATION IN THE VEGETABLE KINGDOM.

1. Introductory.
2. Cultivated plants, as wheat, cabbage, kohlrabbi, lettuce, apple, plum, cherry, peach, orange, grape.
3. Native homes and original or wild ancestors of cultivated plants.
4. Mutability, variation, variability.
   a. Remaining true to type (ancestry).
   b. Explanation of ancestral inheritance.
   c. Constant **vs.** inconstant (variable) variation.
   d. The older **vs.** the newer (Hugo de Vries) ideas regarding species variations.
5. Hybrids, crosses, kinds.
   a. Close (near) and remote. Systematic **vs.** sexual relationship.
   b. Genus hybrids (very rare). Dog and fox. Galium and Asperula.
   c. Species hybrids (more common). Lychnis species, Dianthus species, Rose species, Salix species. Papilionaceous species do not cross readily.
   d. Variety hybrids (very common).
   e. Hybrids of different individuals of the same kind. This is the rule.
   f. Hybrid hybrids are innumerable.
6. Perniciousness of inbreeding and very close hybrids. Benefits of cross breeding.
7. Nature's methods of producing hybrids (hybridization) in the vegetable kingdom.
   a. Cross pollination (chasmogamy) **vs.** close pollination (cleistogamy).
   b. Dioecious, Monoecious and perfect flowers. Explain these relationships.
   c. Factors in cross pollination. Protogyny, protandry, diclinism, dimorphism, prepotency of pollen. (See pollination.)
   d. Morphological adaptations of insects and flowers. Odor, color, nectar. (See flowers.)
   e. Remote factors in hybridization.
8. Artificial selection **vs** natural selection.
   a. Survival of the fittest. (Wallace, Darwin.)
   b. Artificial selection practiced by agriculturist (see corn selection, early and late varieties, etc., oats, wheat, barley), horticulturist (cabbage, kohlrabbi, potato), arboriculturist (apple, pear, orange, olive, quince, cherry).
   c. Artificial crossing (artificial pollination) as practiced in vanilla plantations of Mexico; with corn, wheat and other cereals in Agriculaural Experiment Stations. The work of Burbank and other specialists.

- d. Artificial selection depends upon the recognition and selection of mutationsc and the tendency for these mutations to repeat themselves in an increasing ratio. Perpetuation of freaks.

9. Perpetuation of hybrids.
   - a. By continued watching and selection.
   - b. By vegetative propogation (cuttings).
   - c. By grafting.
10. The tendency on the part of mutants by selection to revert to type. Atavism.
11. Cultivation and other artificial factors in producing variation and in perpetuating variations.

(To be Continued.

THE USE OF DRUGS AND THE SCIENCE OF MEDICINE.

Jacques Loeb has recently expressed himself as follows: "We know that growth and development in plants and animals are determined by a definite though complicated series of catenary chemical reactions which result in the synthesis of a definite compound or group of compounds, namely nucleins. These nucleins have the property of acting as ferments or enzymes for their own synthesis. This determines the continuity of a species, since each species has probably its own specific nuclein or nuclear material." (The Mechanistic Conception of Life, Biological Essays, 1912.)

Life, then, it appears from the above, is in the final analysis a chemical phenomenon. Mechanically it can in other terms be described as a manifestation of trophisms and reflexes. It has now become the fashion to attempt a description of all animal behavior in the above terms. But let us ask ourselves what lies deeper? What supplies the inner dynamic energy, the push, the "kick" to that outward manifestation we call animal behavior? Evidently the answer must be, chemical action.

The moth flies toward the light; the photographic plate lying in the light turns dark. In both an important reaction takes place. In the former the reaction is complicated, and in the latter comparatively simple. But in both instances it is essentially chemical.

The living organism is then an example of a chemical reaction in no essential different from a reaction in a test-tube, except that in the former it is continuous, due to the fact that fresh materials are constantly being added, while in the latter it is brief.

Now if we wish to alter in a different manner the chemical relationships of a solution in a test-tube, we do not attempt to do so by talking to the tube, or praying with it, or, under ordinary circumstances, heating it or freezing it or bathing it, or massaging it, or shaking it; or if in a solution we observe a sediment we do not attempt to rid ourselves of that sediment by filing off the end of the tube containing it; we add some more of the solvent.

It should be in no slight degree the same way when we come to deal with the human body, which is nothing more than a highly complex chemical solution retained within a limiting membrane.

There are a limited number of conditions we call diseases or injury which are obviously mechanical, such as an obstructed bowel (not due primarily to atony), fractures, lacerations, etc., but the great majority of pathological conditions are the result of a disturbance of a proper balance of chemical relationships. The obvious way to treat such conditions is to attempt to rearrange such chemical relationships. Infectious diseases are in nowise excepted here. The bacterial toxins through a peculiar affinity for certain cell groups violently disarrange the normal chemistry of such cells.

One dimly prehistoric day a wandering cave man perhaps observed that when he ate of certain roots or berries he was actively purged. This accident may have happened many times before it occurred to some distant descendant of the first man to administer such roots or berries to relieve the distress and pain of a sluggish bowel. It was in some such simple discovery that scientific medicine was born. Yet it is undoubtedly a fact that even wild animals instinctively at times appreciate the need of certain herbs or minerals and seek them out.

Thus from prehistoric times until the present day the queen of all therapeutic methods has been the administration, by way of the mouth or beneath the skin or into the veins, of some substance designed to alter favorably the chemistry of the body. And it may be confidently predicted that in the distant future, if a science of medicine is a necessity at all, the essential therapeutic method will consist of the administration of medicines.

It may be pointed out that the character of the substance administered has frequently changed. At times vegetable, again mineral; or perhaps as in the Middle Ages and today animal extracts are popular; or, as finally, the serums and vaccines arouse enthusiasm. Yet whether the physician administer an extract of balladonna berries or of tubercle bacilli, that is merely a slight difference in character of the plant life from which the medicine comes. The difference is not so great as between calomel and cascara.

Hence we should not be too ready to reject the therapeutic lore of our predecessors. There has probably been forgotten just as much of value in medicine as there is yet to be discovered.

Much of physiotherapy, if we except the application of ordinary light and X and medium rays, would seem to be an indirect way of bringing about what is, after all, a chemical change that might be secured more directly by the administration of medicines. The science of dietetics is wholly concerned with chemical problems; while many of the beautiful laurels of surgery have been won in the correction of conditions that admittedly constitute in their early stages primarily and essentially medical problems.

Medicine has, within the past fifteen or twenty years, come successfully through a mild autointoxication known as therapeutic nihilism, and an accompanying symptom was much drivel heard in medical societies about the healing qualities of nature. Nature, as a matter of fact, is actually as ignorant and dangerous a doctor as was ever licensed to practice.

This epidemic disease of therapeutic nihilism took its rise from certain half-baked statements made by some high in the profession—beginning with Oliver Wendell Holmes, who, we believe, said something to the effect that if all drugs were in the bottom of the sea it might be worse for the fishes, but it would be better for mankind. Such expressions were quickly seized upon by the spine manipulators, nature curers, those who believe in treating all disease by incantations and other of the motley cults, and did scientific medicine much harm in the minds of the restless and shallow.

But that day is happily rapidly passing, and there are now many indications that internal medicine is about to enter into its most triumphant era. If within the next twenty years we are able to do no more than equal some of the notable discoveries of the past twenty—that in itself will be well worth striving for. The field is a rich one since there is scarcely any limit to the vast variety of substances to be studied that promise to yield interesting results with respect to their physiologic and therapeutic actions. There are, on the one hand, such new chemicals as those of which radium is a striking example, while the place in the mechanism of metabolism is of such a simple substance as calcium is just beginning to be understood.

With these thoughts in mind, are we not justified in expecting that the next fifty years will accord us in internal medicine triumphs as splendid as have made notable the last half century in surgery?—Editorial in Lancet-Clinic, Aug. 13, 1913.

SCIENTIFIC AND PHARMACEUTICAL NOTES

Precipitating Alkaloids by Lloyd's Reagent.

In a preliminary note published in the "Journal of the American Chemical Society" for June, 1913, p. 837, Sigmund Waldbott calls attention to John Uri Lloyd's patent involving reactions of intense scientific interest and wide scope, the extent of which has been perceived by no one more clearly than the discoverer himself. (Amer. Journ. Pharm., LXXXV, p. 326). Reserving a more detailed statement of his labors for future publication, Prof. Lloyd, at the beginning, has kindly given Mr. Waldbott the privilege of investigating the chemical and physical nature of his reagent.

This reagent is essentially hydrous aluminum silicate, derived from Fuller's earth. The reagent has the startling quality of precipitating alkaloids completely from neutral or acid solutions thereof. The alkaloid may be recovered by treatment with a base and an alkaloidal solvent. Quinine bisulphate was used exclusively in the following experiments, since Prof. Lloyd himself has extended his research over a great number of alkaloids and alkaloidal salts, including those occurring in plants.

The reagent had approximately the following composition: H_2O, 17.41 per cent.; SiO_2, 55.30 per cent.; Al_2O_3, 9.82 per cent.; Fe_2O_3, 14.18 per cent.; CaO, 1.58 per cent.; CO_2, per cent. not determined. Heating the material to about 130° C., did not destroy its peculiar activity; but a red heat expelled an additional quantity of water rendering the reagent inert. When the reagent is exhausted with hydrochloric acid, the residual earth is still effective. The activity of the reagent is not impaired by concentrated nitric acid or by aqua regia. After the alkaloid has been removed from its combination with the reagent, the residual material retains the full effect. This process results in a jelly difficult to filter and slow to settle it; it is precipitated readily by addition of an acid, or an alkaloidal salt. In drying, the jelly shrinks to a very small bulk; conversely, the solid expands remarkably in contact with water. The jelly precipitates inorganic salts also, e.g., barium chloride, lead acetate, zinc sulphate, etc.

It will be observed that the phenomenon is one of colloidal chemistry. The thought suggested itself that water-deposited clay might show the same action; indeed, it was found by Mr. Waldbott last summer that the fine blue clay so abundant in the hills of Cincinnati, after treatment with hydrochloric acid, had the same effect upon alkaloidal salts, rather faintly as may be expected, yet very distinctly.

In the course of this investigation, other colloidal materials were also examined, and it was found among others that colloidal silicic acid, or colloidal arsenous sulphide plainly precipitated quinine sulphate.—Merck's Report.

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139. **The Phagocyte Index.**—Stuber and Rütten remark that the opsonic count has not made much headway in Germany; there is a general distrust of the hypothetic opsonins while the technical difficulties are great. They have worked out a very simple method for the phagocyte count which throws light on the vital functional capacity and behavior of the leukocytes. Instead of trying to determine the phagocytic capacity of the leukocytes in regard to the special germs responsible for the trouble in the individual case, they sought to determine the vital capacity of the leukocytes in the individual case as tested with a standard object to be phagocyted. After many tentative experiments they found the spores of the thrush fungus, Oidium albicans, apparently the best adapted for the purpose. It is cultivated on glycerinagar with 0.25 or 0.5 per cent. eosin on which it develops without filamentous threads, running only to spores during months of cultivation. A culture of this fungus is suspended in an artificial serum (7.5 c.c. sodium chlorid; 6 c.c. sodium citrate and distilled water to 1,000 c.c.). The leukocytes are liable to clump unless there is some homogeneous serum or ascitic fluid present or other solution of albumin. They found a saturated aqueous solution of egg albumin best for the purpose. In a centrifuge tube are placed 0.1 c.c. of the artificial serum; 0.1 c.c. of the ovalbumin solution; 0.03 c.c. of the suspension of the thrush fungus, and 0.03 c.c. of the blood to be examined. The contents of the tube are well mixed with a platinum needle and the tube is then kept for forty-five minutes at 37 C. It is then centrifuged for one minute with about 800 turns. Most of the red corpuscles are then in the tip of the tube, above this comes a layer of leukocytes, and above this the serum. The serum is then aspirated out; the long drawn out tip of the tube, con-

taining the red corpuscles, is then broken off. The leukocytes are thus left in the tube and they are easily blown out on an object glass and stained by Leishman's technic. The thrush fungus spores take a bright blue and are encircled with a white halo. They count the number of spores in 200 leukocytes; with normal phagocytes there will be 200 spores in 200 leukocytes,

so the index will be $\frac{\text{Number of spores}}{\text{Number of leukocytes}}=1.$

This is the standard index in health. The individual index is the $\frac{\text{Patient's index}}{\text{Normal index}} =$ Phagocytic Index. The whole technic is thus extremely simple and in the cases cited the low index at the height of the disease and its gradual rise during convalescence amply demonstrate how the phagocytic index mirrors the capacity and power of the organism to combat invading infection. Among the important information which it affords may be mentioned the differentiation of gastric ulcer from gastric cancer as the phagocytic index shows that the organism is not depressed by malignant disease. The index varies in health from 0.8 to 1.2; when it is merely 0.5 the defensive forces are evidently at a low ebb. Of course it is a delicate biologic reaction, and it is necessary to test the fungus spores occasionally with normal blood to detect degeneration.

Detecting Pilocarpine and Quinine in Hair Tonics.

These two alkaloids are often present together in hair tonics and pomades, and their detection may easily be accomplished states G. Meillére (Pharm. Zentralh, LIV, p. 524), as follows: The solution is slightly acidulated, and potassium dichromate added so long as a precipitate continues to form. The mixture is then shaken out with chloroform until the chloroformic extract ceases to exhibit a color. The quinine dichromate is easily soluble in chloroform, while pilocarpine dichromate is insoluble, and remains behind. On now shaking afresh with chloroform and hydrogen peroxide solution a coloration characteristic for pilocarpine is obtained. By shaking the chloroformic extract with ammonia, the chromic acid is removed, and the quinine in the solution may then be easily detected.—Merck's Report.

The Caloric Estimation of Percentage-Mixtures of Milk.

It is of occasional advantage in feeding infants by the percentage method, to determine the daily food consumed in terms of calories. In this way may be determined whether or not the child is being overfed or conversely. Heubner and Finkelstein determined the number of calories per day per kilo of body weight necessary to insure the proper development of a normal infant. This Heubner called the energy quotient, which he found to be 100 calories for breast-fed and 120 for artificially-fed infants. The energy quotient remains the same from the end of the third week until the sixth month, then gradually decreases to 80-85 calories until the end of the first year is reached.

The number of calories of milk-mixture consumed by an infant daily, may be estimated fairly accurately according to Fraley's method, as follows:

> 2 × the per cent. of Fat + the per cent. of sugar + the per cent. of Proteid, multiplied by 1¼ times the total quantity of ounces of milk per day = the caloric value of a day's feeding
>
> or

$$2F + S + P \times 1\tfrac{1}{4}\,Q = C.$$

Aunt and James.

Past stall after stall went the rich merchant followed by a footman in smart livery. It was the annual village bazaar.

"Ah, Mr. Fitzbrendon," said a really sweet and charming lady at one of the stalls, "and what are you going to buy? Dear old auntie and I am running this table and we have homemade cakes, aprons, penwipers and—"

"Yes," said F., "and I'll buy just one of each. But do you sell kisses at your stall?"

"Oh, certainly!" came the ready reply. "One guinea each!"

"Right!" replied the autocrat. "Then I'll take a couple—and good measure, please!"

"Aunt," remarked the fair and dainty damsel, "forward, please! Two kisses for this gentleman!"

For a moment the man of means was nonplused, but only for a moment. Then he turned to his servitor:

"James," he said coolly, "just take this purchase, please!"—Chicago News.

AN EDITOR'S SAVINGS.

An editor who started about twenty years ago with only fifty-five cents is now worth $100,000. His accumulation of wealth is owing to his frugality, good habits, strict attention to business, and the fact that an uncle died and left him $99,999.—Editor and Publisher.

THE SODA FOUNTAIN

Vichy Water.

Bicarbonate Soda, 8 ounces a. v. Table Salt (Sod. Chlor.) ½ ounce; Phosphate of Soda, 80 grains; Potassium Sulphate, 110 grains; Carbonate of Ammonia, 10 grains. Dissolve in ½ gallon of carbonated water and pour into 10-gallon tank. Add 9½ gallons of water and charge to 120 pounds pressure.

Ice Cream Soda.

There is no one knows when he has been properly served any quicker than the lover of an ice cream soda. Ice cream soda should be just as thoroughly mixed as any drink you serve.

Draw your desired syrup into a 12 or 14-ounce glass and mix with fine stream. Add your portion of ice cream and put your spoon into glass. Using the coarse stream fill rapidly about two-thirds full, then with the fine stream mix the whole thoroughly. To do this let the fine stream go down the side of the glass so as to reach the bottom.

Horlick's Malted Milk Shake.

Quite frequently someone wants a cold malted milk prepared without carbonated water, and in such cases milk may be used in place of it. Malted Milk may be shaken into plain milk without syrup, or it may be flavored with coffee, vanilla or chocolate, and some use a little simple syrup, usually not more than one-half the quantity served with plain soda. Pour the syrup desired into a 12-ounce glass, add the shaved ice, then Horlick's Malted Milk powder; fill with fresh milk and shake thoroughly, straining into a clean glass.

The Sundae.

These are sometimes called College Ices, Frappes, and Dessert. They are very delicious and trade winners when they are properly served, and certainly look dainty and refreshing when well prepared.

The Sundae is nothing more or less than a portion of ice cream over which a small quantity of syrup or crushed fruit, etc., has been poured.

This seems very simple, but some fountains make a poor job of this work. One of the neatest and quickest methods of serving is to dispense them in nice thin china sauce-dishes which have flat bottoms. (A flat bottom keeps the ice cream from rolling around in the dish every time you put your spoon in it.) These can be secured in a variety of styles and at all prices, but neat, plain, thin ones are preferable.

Fill a cone disher (capacity eight to quart) rounding full, and place in glass. Over this pour the desired syrup or crushed fruit. A syrup made of a mixture of fruits and chopped nuts makes a fine flavor for a Sundae. Fresh crushed fruits should be used in their season.

Horlick's Malted Milk Sundae.

Sprinkle a little of Horlick's Malted Milk over a cone of ice cream placed in a champagne glass. Serve a small glass of plain soda with each Sundae, also a paper napkin if you have them.

Horlick's Malted Milk Ice Cream.

Vanilla Syrup, 2 teaspoonfuls; Ice, shaved, sufficient; Ice Cream, 2 tablespoonfuls; Horlick's Malted Milk, 1 tablespoonful. Put in shaker, shake thoroughly, strain and fill glass with plain soda, fine stream.

Egg Drinks.

No better beverage was ever served at the soda fountain than the egg drink. No other drink would do so much toward giving you a reputation for serving fine soda as the egg drink, but you must serve it right. Regardless of price, eggs must be fresh. There is no dodging this point, and you do it at your peril. Be sure never to serve an egg which upon breaking shows any signs of being otherwise than strictly fresh. The yolk of a fresh egg is firm.—The Apothecary.

Plain cream adds much to many soda flavors, but it makes a difference how it is used and how it is dispensed. Some use merely a dash or about a teaspoonful, some half an ounce, and some even an ounce. It is not well to use too much, but better use too much than too little and a half ounce is little enough; it may cost a little more to be liberal, but it will pay in the end.

Cream may be properly served with any flavor that is not acid, and even with acid flavors at the request of your customer, though they should not be recommended.

When serving such flavors as Vanilla, Coffee, Chocolate, Peach, etc., sweet cream should be used unless ice cream or no cream is specified by the customer.

The correct method for mixing is as follows: Draw the syrup in a 12-ounce glass, add 1½ ounces plain cream. Use fine stream to thoroughly mix the cream with the syrup, then coarse stream and finish up with fine stream.

THE NEWS BUREAU OF THE PACIFIC PHARMACIST

OPENING EXERCISES OF THE CALIFORNIA COLLEGE OF PHARMACY.

On September 3rd, the California College of Pharmacy gave the opening exercises in the general lecture hall of the college. The program was under the auspices of the Alumni Association of the California College of Pharmacy. Gaston E. Bacon, President of the Board of Directors of the College, delivered the address of welcome, followed by a symposium by the faculty on the use of text-books. W. Bruce Philip, President of the Alumni Association, gave some very excellent advice to the student body. The President of the Senior Class gave a hearty welcome to the Junior Class.

The attendance this year is the largest in the history of the college. Several changes have been made in the college. Some new laboratory tables have been added to the chemical and pharmacognostical laboratories. Mr. Arthur Reum, a graduate of the University of Minnesota, has been appointed laboratory assistant in pharmacognosy. Mr. Reum is an experienced pharmaceutical chemist, having been engaged as manufacturing chemist in Minneapolis and more recently by Langley & Michaels of San Francisco. His duties at the College compelled him to resign from Langley & Michaels. He is now with K. B. Bowerman of San Francisco, having charge of the laboratory work.

Where McCabe Is Now.

The public generally will have no difficulty in recalling the Hon. George P. McCabe. He was that official of the Department of Agriculture under the Taft-Wilson régime whose steady hostility to the enforcement of the Pure Food Law, aided by a discreditable conspiracy which he engineered, finally forced Dr. Wiley out. Mr. McCabe is now ready to capitalize his experience. This circular letter, sent out from his office, tells its own story.

GEO. P. McCABE
Attorney-at-Law
410-11-12 Lewis Building,
Portland, Ore.

Gentlemen—You are interested in the application of the food and drug laws, national and state, to the labeling and composition of the products which you sell.

Court cases, with attendant public notice of violation, are expensive and hurtful. These can be avoided. It is a case where an ounce of prevention is worth a pound of cure.

For that reason I desire to call your attention to the fact that I have opened a law office in Portland, and am prepared to advise manufacturers and dealers on the legality of their labels, and if necessary to represent them before the United States Bureau of Chemistry laboratories, the various State Food Commissioners, and the state and federal courts.

For the past several years and until the third day of March of this year, when I resigned, I have been Solicitor of the United States Department of Agriculture, and until recently a member of the United States Board of Food and Drug Inspection. In those positions I was in charge of all prosecutions under the national act, and became thoroughly familiar with the food laws and regulations of the states.

I am under retainers now from a number of manufacturers as adviser on food and drug matters. If you feel the necessity of advice on these subjects, let me hear from you. Very truly yours,

(Signed) GEO. P. McCABE.

—Collier's Weekly.

Impudence.

Immunity breeds rashness. So long have the patent medicine makers purchased with their advertising funds exemption from newspaper criticism that they have come to regard themselves as highly privileged characters. On no other theory can there be explanation of the libel suit brought by one C. A. Barnes against the Detroit Saturday Night, because that spirited weekly, in the course of its campaign against quackery, fell foul of the consumption "cure," Nature's Creation, of which Barnes is the Detroit agent. He professes to consider himself damaged $25,000 worth by the action of Editor Nimmo in calling upon the Federal Government to issue a fraud order against him. But this is only a small part of what Mr. Nimmo did to Nature's Creation. He showed it to be a worthless and potentially very dangerous form of quackery, supported by testimonials from grateful patients who had inconsiderately died of the very disease of which the nostrum had cured them. He proved that their claims were false, their medicine a cheap mixture of iodide of potassium, and their whole system a typical bit of quackery. So impressed was the Detroit News with the expose that it notified Barnes to get out of its columns with his advertising, and stay out, whereupon Barnes rushed into court, complaining that he had been maltreated "as an individual and private citizen, and as the agent for the sale of said medicine," and declaring his unalterable conviction that the demand for a fraud order against his activities was tantamount to a charge that he was using the mails to defraud. Singular perspicuity on the part of Mr. Barnes! We violate no confidence of Editor Nimmo's in stating that the dark suspicion regarding the editorial meaning and intent was well founded. In our own incursions into the battlefield of patent medicines, we have encountered some notable instances of the impudence of quackery, but none more astounding than that the vender of 24 cents' worth of a common drug, sold at $5.00 as a sure cure for tuberculosis, should submit his case to the finding of an American jury. Mr. Nimmo has little to fear. So much can hardly be said for his opponent. The searching publicity of a legal inquiry is the last thing that he or his nostrum can afford; and it is in reality they that will be on trial. Meantime, the Saturday Night continues unperturbed lustily to flutter the vulture roosts of the other fake nostrums and to make life a constant irritation to the local papers which support and foster their trade in human life.—From Collier's Weekly, August 23.

SOME MISCELLANEOUS NOSTRUMS.

HIMALYA; THE KOLA COMPOUND.

Though advertised as "Nature's Great Specific for the Cure of Asthma," the chemists of the North Dakota Agricultural Experiment Station reported "Himalya, the Kola Compound," to be "a weak hydro-alcoholic solution of potassium iodid, flavored with peppermint and licorice and colored with caramel." While the name would indicate that the active ingredient of the stuff was kola, the chemists stated that "little, if any, kola enters into the preparation." The preparation contains more than 9 per cent. alcohol, yet the exploiters recommend it to be taken with whisky! The stuff was sold for $2 a bottle; "it could be prepared," according to the North Dakota chemists, "by the average pharmacist for, say, about a dime."

MRS. BRADLEY'S FACE BLEACH.

The claims made for this stuff, which emanates from Minneapolis, are that it "removes moth, tan, freckles, pimples, blackheads, prevents wrinkles, oiliness and aging of the skin." What else it does is left to the seeker after beauty to learn by experience. Its ingredients were reported by the North Dakota Government Agricultural Experiment Station to be Epsom salts (magnesium sulphate) and corrosive sublimate (mercuric chlorid). A more detailed analysis appeared in the Druggists' Circular, March, 1913:

Anhydrous magnesium sulphate...	45.7 per cent.
Sodium chlorid (common salt)....	9.7 per cent.
Mercuric chlorid (corrosive sublimate)	23.6 per cent.
Water	23 per cent.

DR. T. FELIX GOURAUD'S ORIENTAL CREAM OR MAGIC BEAUTIFIER.

As long ago as 1907, Dr. T. Felix Gouraud's Oriental Cream or Magical Beautifier was analyzed by the State chemists of New Hampshire, who reported that it consisted of "approximately one-half ounce of calomel suspended in a short half pint of water." More recently—in 1912—it has been analyzed by the chemists of the Connecticut Agricultural Experiment Station, whose report is practically identical with that of the New Hampshire chemists. Some of the claims made for this simple mixture are:

> "Purifies as well as beautifies the skin. No other cosmetic will do it."
>
> "Removes tan, pimples, freckles, moth patches, rash and skin diseases and every blemish on beauty and defies detection."

An eight-ounce bottle of this preparation costs 98 cents. As the Connecticut chemists say: "The amount of calomel in a bottle of this substance can be bought at retail for about 6 cents; the remaining 92 cents is the charge for a half pint of water."

CAT-ER-NO "SOULES."

On this article, which is said to be made by the Soule Medical Company, Minneapolis, the chemists of the North Dakota Experiment Station reported: "Sample was an aqueous solution of menthol with just enough of a vegetable drug present to give it a color. There was less than 0.1 of 1 per cent. of total solids. Sample would be of little value as a catarrh cure."

ELY'S LIQUID CREAM BALM.

This preparation, which is sold as a "remedy for catarrh, catarrhal deafness, hay fever, cold in the head," is a pinkish liquid having the odor of thymol and menthol. It was analyzed by the chemists of the Connecticut Agricultural Experiment Station, who reported that it "appears to consist essentially of liquid petrolatum with small quantities of thymol and menthol." The chemists further asserted that a bottle of Ely's Liquid Cream Balm costing 69 cents contains about half a cent's worth of liquid petrolatum.

DR. BOSKANO'S COUGH AND LUNG SYRUP.

Still another "new remedy for the positive cure of consumption, coughs, colds, etc." As long ago as 1908 the Kansas State Board of Health showed this remedy to be misbranded, describing it as "a saccharin solution of expectorant drugs with tar and chloroform." In 1911 it was analyzed by the chemists of the North Dakota Agricultural Experiment Station, who reported that it "appears to be made from an inferior grade of honey, syrup of tar, chloroform, alcohol and morphin." The analyst noted that practically all the morphin was found not in the solution but in the sediment which was deposited on the sides and bottom of the bottle; yet the mixture was put up without a "shake" label! He concludes: "The dead fly found in the liquid could scarcely merit the 'hearty approval of all physicians and medical experts' which is claimed in the circular accompanying this remedy."

VERITABLE GRAINS DE SANTE DU DOCTEUR FRANCK.

Since the beginning of the nineteenth century, according to the descriptive leaflet, these "Grains of Health" have been preventing "typhoid congestions," and various other woes which arise from impaired intestinal functions. Their value is defined as "stomachic and laxative, depurgative, purgative and antiseptic." The "grains" were examined by the chemists of the Connecticut Agricultural Experiment Station, 1912, who reported that the pills appeared to be essentially aloes and cost at the rate of $33.19 a pound.

DR. BLOOMER'S CATARRH REMEDY.

This preparation, hailing from Altoona, Ga., comes in cigarette form. Analyzed by the chemists of the North Dakota Agricultural Experiment Station it was reported to contain "chamomile flowers over 50 per cent., powdered cubeb, fennel seed and a few other powdered vegetable substances."

SCHENCK'S PULMONIC SYRUP.

A sample of this "seventy-year-old Standard Remedy for Consumption, Coughs, Colds, Diseases of the Lungs and Respiratory Organs," was analyzed by the chemists of the Connecticut Agricultural Experiment Station, who reported: "This remarkable remedy for consumption is essentially a wintergreen-flavored mixture of saccharin syrups, 96.4 per cent. of the solids consisting of sugars. It is hard to believe that the virtue of this material rests in the 2.7 per cent. of undetermined solids (possibly vinegar of squills). It is recognized that a rich and nutritious diet is essential in the treatment of consumption, and it is true that this substance, with nearly 73 per cent. of sugar, is highly nutritious, and yet one can scarcely recommend the purchase of such a preparation at the rate of $2.50 a quart, when molasses is obtainable at 50 to 60 cents a gallon."

DR. J. H. McLEAN'S TAR WINE LUNG BALSAM.

"Will cure coughs, colds, bronchitis, consumption, asthma, throat and lung troubles," reads the label; but, according to State chemists of North Dakota, analysis of this preparation would indicate that it "is nothing but a weak syrup of tar, containing about 15 per cent. by volume of ethyl alcohol." The examination is also reported to have shown that "the base of the preparation is not wine, as the label would lead one to believe." The report closes: "Thus the remedial agents in this preparation which 'will cure consumption,' etc., are sugar and alcohol."

DR. GUN'S PAIN EXPELLER.

This product, which is said to be prepared by C. W. Beggs Manufacturing Co., Chicago, was declared misbranded by the Colorado State Board of Health in 1909. One of the reasons for this action on the part of the Colorado officials was that the stuff was labeled "free from any dangerous ingredients," when, as a matter of fact, it contained opium. The product was again examined by the chemists of the North Dakota Agricultural Experiment Station, who reported in 1911 that two bottles of the preparation, bought in different parts of the state, showed variation in the proportions of the ingredients. The product was found to contain alcohol varying in amount between 50 and 60 per cent. and to have from 1 1/5 to 1 3/4 grains of opium to the ounce, while the presence of camphor and capsicum was determined.—Jour. A. M. A., Aug. 23, 1913.

FORM OF DECLARATION REQUIRED OF IMPORTERS OF COCAINE.

Washington, D. C.—The U. S. Department of Agriculture, acting under Treasury Decision No. 33456, dated May 29, 1913, with relation to the importing and use of cocaine, coca, and their derivatives or preparations containing them, has prepared and has ready for issue at all of its branch laboratories and at the Bureau of Chemistry in Washington, copies of the declaration from which must be subscribed to by all importers of and dealers in these products. These blanks will be furnished free on request from importers and dealers.

The purpose of the new system of declaration is to prevent the indiscriminate and promiscuous use of cocaine, coca, and derivatives or preparations containing them, on the ground that these things are dangerous to the health of the people of the United States. At the same time, under this declaration entry of these drug products is permitted for legitimate use in medicine. The form of declaration, official copy of which is appended, requires the importer to declare under oath that the import is designed for use in a manner not dangerous to health, and that he will secure from each and every person, firm or corporation to whom the import is sent, the same declaration as to the use the recipient will make of that portion of the import sold or sent to him. In addition, the importer must agree to allow accredited Government inspectors to go over statements from persons to whom he has supplied the goods, and at the end of the year the importer must report to the Bureau of Chemistry the amount of these products that he has on hand on the 1st day of January in each year.

The official form of statement follows:

Declaration for Cocaine, Coca, Their Derivatives and Preparations in Compliance With the Requirements of T. D. 33456.

Inasmuch as the indiscriminate and promiscuous use of cocaine, coca, their derivatives or preparations containing cocaine or its derivatives, is dangerous to the health of the people of the United States, and section 11 of the food and drugs act, June 30, 1906, prohibits the importation of any food or drug product into this country which is "adulterated or misbranded within the meaning of this act, or is otherwise dangerous to the health of the people of the United States . . .," I subscribe to the following declaration as a condition precedent to the release of the merchandise enumerated therein.

Declaration.

"I, (1)..........., of the (2)..........
......................, (3) ....
do solemnly and truthfully swear that the cocaine, coca, their derivatives or preparations containing cocaine or its derivatives, more particularly described in attached invoice, bill of lading, or bill of sale, purchased from (2)................

(1) Name of individual or representative.

(2) Name of individual, firm, or corporation.

(3) Importer, manufacturing chemist, or wholesaler, retailer, or any other dealer in or purchaser of drugs, as the case may be.

................., by (2)................,
the .... day of..........., 191..,
are intended in good faith for use in a manner not dangerous to the health of the people of the United States, and that I will keep, or have kept, a complete record of (4) .... in (5)........... packages of cocaine, coca, their derivatives or preparations containing cocaine or its derivatives, and will secure from each and every person, firm, or corporation to whom the goods herein described, their derivatives, or preparations shall be sold, in whole or in part, a declaration of this form, which declaration shall be kept on file for a period of not less than three years and be open to inspection of any properly accredited Government Inspector.

"I further do solemnly and truthfully swear that each and every package of cocaine, coca, their derivatives, or preparations containing cocaine or its derivatives, more fully described in attached order, bill of lading, or bill of sale, shall bear a statement, in the form prescribed by the regulation for the enforcement of the food and drugs act of Jnue 30, 1906, of the amount of cocaine or cocaine derivatives contained therein.

"I furthermore solemnly and truthfully declare that I will make a report to the Bureau of Chemistry of the Department of Agriculture, Washington, D. C., not later than January 15 of each year of the amount of cocaine, coca, their..........

(4) Number of pounds, pints, ounces, etc.

(5) Number, derivatives, or preparations containing cocaine or its derivatives on hand the 1st day of January of that year, the amount imported or received during the preceding 12 months, and the disposition made thereof."

....

....

Declared to before me this.........day of
........, 191...

....

PAYING FOR IT.

S. Kidder—Is that Wantley's automobile?

Pete Rol—He calls it his. First he put a mortgage on his house to buy the car; then he put a mortgage on the car to pay for repairs; and now he is figuring how to raise money to purchase gasoline.—Judge.

PERSONALS AND TRADE ITEMS

Pathogenesis.

A student of phytopathology
And Ascomycete etiology,
Remarked as he ate a
Huge scabby potato,
"Pathological phytomorphology."
—Life.

After having been in business for twenty years at Third and Broadway, Los Angeles, the Boswell & Noyes Drug Company has opened a second store on the ground floor of the new Hollingsworth building at Sixth and Hill streets. Every effort, it is stated by officials of the company, has been made to make this one of the best equipped and most modern establishments of its kind on the coast.

Beginning Monday, August 16, the Arthur drug store at the corner of Sixth and Broadway, San Diego, will be open all night. According to Mr. Arthur, the proprietor, San Diego has reached a point in its development when it can support a drug store of this kind.

Harry M. Horn, formerly owner of the Hollywood Pharmacy, has opened a new drug store at Gardner Junction, under the name of the Gardner Junction Drug Store.

The announcement that Henry Downs, the popular and efficient clerk of the Oberdeener Pharmacy, has accepted a position as manager of the Mateo Drug Company will come as a big surprise to his many friends as well as the patrons of the drug store. Mr. Downs has held the position with the Oberdeener Pharmacy for the past six years, and has proven himself the right man in the right place, both in dealing with the public and in caring for his duties in the store.

Frank Wilkins, a registered pharmacist from San Francisco, arrived in Reedley, Cal., and has accepted a position with the Reedley Drug Company.

The Palace Drug Company at Antioch, the Regal Pharmacy at Pittsburg and the Martinez Drug Company at Martinez are enjoying their first anniversary under the joint ownership of W. E. Calahan and G. P. Keller.

Syrup White Pine Comp.

PLAIN, WITH TAR or MENTHOLATED

National Formulary Goods

WITH 6% OF ALCOHOL

Put up in neat packages to retail at 25c and 50c. Offer your customers something that is as good as can be made.

SCOTT & GILBERT CO., Inc.

Successors to Cespi Chemical Co., SAN FRANCISCO

Sylvester's Haarlem Oil

For 200 Years
Standard remedy of the world for
KIDNEY DISEASES,
BLADDER TROUBLE,
GRAVEL and all
INWARD
INFLAMMATION.

WE ARE EXCLUSIVE AGENTS
for the U. S. and Canada for the importation of

GENUINE SYLVESTER'S
HAARLEM OIL

From Haarlem, Holland
None Other is Genuine. Look for "C. Sylvester" on the label

M. Coward, Successor to C. Sylvester
Depot, No. 270 Greenwich Street, New York

Too Sick.

"Hello, Pat," said Mike, "I hear that your wife is sick."

"She is that," answered Pat.

"Is she dangerous?" asked Mike.

"No," said Pat. "She's too sick to be dangerous."

The "Nesom" Drug Store, located at the corner of Brand boulevard and Broadway, Los Angeles, was sold to C. H. and R. H. Munson of Boone, Iowa.

Announcement of Langley & Michaels Company's annual display of **holiday goods** is made on another page in this issue of the Pharmacist. A perusal of the list given of popular salable gift articles gives one a very comprehensive idea of what the season's offerings will consist of.

ARTISTS' MATERIALS

A. H. ABBOTT & CO.
127 N. Wabash Ave., Chicago
Artists' Materials and Drafting Supplies
Winsor & Newton's Colors, Brushes
Canvas, China Paints and Gold
White China for Decoration

PHARMACY STUDENTS
PURCHASE THE BEST

LUDY
Answers to questions Prescribed Pharmaceutical State Boards
8vo. 303 pp.
Price $1.50 net.
JOHN JOS. McVEY
Publisher Philadelphia

Druggists' Glass Labels,
Shelf Bottles and Drawer
Pulls of every description.
First-class workmanship.

Order from your jobber.

Manufactured by

FAY & SHEULER
St. Louis, Mo.

Two cash registers in the Hefton drug store of Hanford, Cal., were relieved of the bulk of their contents of cash. In broad daylight the thief entered a back window of the drug store and once inside busied himself with nothing but the looting of the registers, a total of $25 in larger money being taken.

Bismuth Subnitrate, U. S. P.

The progress in the manufacture of medicinal chemicals is well illustrated in the perfecting of the Bismuth Salts.

As an example, it is not many years since the doctors and druggists were quite accustomed to an article which would suffer considerably by contrast with the Bismuth Subnitrate of today, for instance that of the Powers-Weightman-Rosengarten Company.

Their article is not only of a high standard of purity, white and bulky, but has the additional advantage of being tasteless—a combination of properties which makes their article almost distinctive and appeals to the most critical practitioner and pharmacist.

The P.-W.-R. brand is supplied by all jobbers at price not exceeding that ruling for other reputable makes.

For Sale and Exchange—Drug Stores in 48 states. Will also furnish positions and locations for Physicians, Dentists, Pharmacists, Chemists and Veterinarians. Established 1904. Strictly reliable. Gilt edge references. **F. V. Kniest, R. P., 505 Bee B'ld'g., Omaha, Neb.**

SAL HEPATICA

Special Discount Announcement to the Trade

$ 12.00 lots, assorted, 5% discount
48.00 lots, assorted, 8% discount
100.00 lots, assorted, 10% discount
Through Jobbers

BRISTOL-MEYER CO.
727-729 Greene Ave., Brooklyn-New York

A Notable Advertising Campaign.

If the American medical profession is not fully informed with respect to the virtues of Phylacogens it will not be through niggardliness in the use of printer's ink. At the beginning of the current year Messrs. Parke, Davis & Co., manufacturers of the products in question, entered upon an elaborate program of advertising in their behalf. Practically the entire medical press of the country was utilized. Rheumatism Phylacogen was the first of the line to receive attention. Then Pneumonia Phylacogen was brought into the limelight. Erysipelas Phylacogen had its turn. Gonorrhea Phylacogen was in time taken up. Mixed Infection Phylacogen received its share of publicity. The campaign has now covered a period of eight months and still continues. This widespread and uninterrupted promotion work in the interest of the Phylacogens constitutes one of the most remarkable advertising campaigns ever conducted by a manufacturer of medicinal products.

I Shall Not Die Tonight.

If I should die tonight—
And you should come to my cold corpse and say,
Weeping and heart sick, o'er my lifeless clay;
If I should die tonight—
And you should come in deepest grief and woe,
And say, "Here's that $10 I owe,"
I might arise in my great white cravat
And say, "What's that?"
If I should die tonight—
And you should come beside my corpse to kneel,
Clasping my bier to show the grief you feel;
I say, "If I should die tonight—
And you should come to me, and there and then
Just even hint 'bout paying me that ten,
I might arise awhile—but I'd drop dead again."
I shall not die tonight,
But I shall live to see another day.
When to my lawyer I shall say:
"I did not die last night.
So hunt that customer with tongue and pen,
By day and night and get that ten,
And if you get it, then, or then,
I'll gladly die—some other night."

John N. Zook purchased the Fischer Drug Store of Santa Fe, N. M., and will shortly remove the stock of drugs now in the Zook Pharmacy to the Fisher Drug Store.

NEW SODA DRAUGHT

Modernize Your Fountain

Customers admire the rapid operation and novel style of action. Greatest soda server in a rush ever invented. Cannot leak.
Booklet tells "why;" send for copy.

ROBERT M. GREEN & SONS
1415 Vine Street, Philadelphia

A new corporation, to be known as the Mateo Drug Company, has completed the purchase of the Morse Pharmacy, E. E. Johnston, proprietor. The manager and chief owner of the new concern will be a well-known San Francisco druggist.

E. G. Gilson was in Mesa recently, purchasing fixtures and supplies for his new drug store at Chandler, N. M.

H. S. McAuley, a registered pharmacist from Reno, has accepted a position with the Stephenson Drug Company of Winnemucca, Nev. This concern now has two registered pharmacists, the other being W. P. Stephenson, president of the company.

John L. McKibbin recently bought John J. Hamilton's drug store in the southern part of Albuquerque, N. M.

Drug Store Exchange.

Having established a Drug Store Exchange, I offer my services to my clients in finding a buyer for a business or a business for a buyer. I have a good list of Drug Stores for Sale and adding more daily. Also a list of prospective buyers which I am trying to satisfy. Five years in the Drug Trade in California.

F. A. WECK,
501 Third Avenue, San Francisco.

A Convenient Portable Fuel

for camping parties, prospectors, hunters, for the sick-room, nursery, ladies' boudoirs, for offices, laboratories, etc.

How to Use

Place the cube on any non-combustible substance and light with match. When through, blow out.

No Smoke, No Soot

Cub-Al-Co
Solidified Alcohol
In Small Cubes,
Ready for Use

Manufactured by the
SAN FRANCISCO CUBE ALCOHOL CO.

Prices:

Single Can	25 Cents
One Dozen Cans	$2.00
In Gross Lots, per Dozen	$1.70

Send All Orders to
723 Pacific Building,
San Francisco, Cal.

One Cube Will

Cook one or two eggs, two cubes will fry bacon and eggs or a chop, etc. One of the cheapest and most convenient fuels in existence.

The heating value of the cube is equal to about 90% alcohol, weight for weight.

25 Cubes in Each Can

Denatured alcohol is used, therefore not to be used for any other purpose than the one herein declared.

Glyco-Thymoline

TRADE MARK
Registered in U. S. Patent Office.
In Use Nineteen Years.

Three Sizes—ONE POUND—SIX OUNCE (Sprinkler Top)—THREE OUNCE
Retail Price—ONE DOLLAR—FIFTY CENTS—TWENTY-FIVE CENTS

THIS TRADE MARK IS THE PROPERTY OF
Kress & Owen Company
361-363 PEARL ST., NEW YORK

PRICE CHANGES: The fluctuations of the month have been comparatively few and of minor importance. CITRIC ACID and CARBOLIC ACID each record a further advance of 1c. IODINE has advanced 50c, IODIDE POTASH 35c and in sympathy the various other IODIDES are marked up proportionately. ERGOT declined 7c, SMALL FLAKE MANNA 5c, TONKA 15c, GUM MASTIC 5c, VALENCIA SAFFRON 15c, SALICYLIC ACID, NITRATE SILVER, ALEXANDRIA SENNA and CINCHONIDIA show slight advances. COL LIVER OIL $1.50 per bbl. higher. MENTHOL advanced 20c, BALSAM TOLU 10c, AMERICAN SAFFRON 30c, GOLDEN SEAL ROOT 25c, FALSE UNICORN 10c. DAMIANA, WORMWOOD, CELERY SEED, BALSAM FIR and SUGAR OF MILK are all weaker. SANTONIN shows advances aggregating 75c. In ESSENTIAL OILS the changes are few. In the advance column is found OIL LEMON 15c, BERGAMOT 25c, ORANGE 25c and PEPPERMINT 10c. Declines are SPEARMINT 15c, WORMWOOD 10c, SASSAFRAS 5c, CLOVES 10c. SENEGA declined 2c and OREGON BALSAM 15c. LINSEED OIL advanced 3c, TURPENTINE 3c. HARD MERCURIALS declined 5c per pound. IODOFORM advanced 40c.—L. & M.

The Fountaineer's Romance.

To the counter tripped Louise:
"Ice cream soda, if you please."
Jimmie winked—the rascal did!
Questioning, "what flavor, kid?
If you'd have the drink match you
I think peach would surely do."
Then he kissed her—nervy scheme!—
While she pondered, "Shall ice cream?"
"Name the day when you'll be mine;
I think Sundae would be fine."
Coyly then she made reply,
Blushing deeply, "Soda I."

—Guy Oliver.

OUR NEW ADVERTISERS AND OTHERS.

We wish to call attention to the ad (on page 7) of the **Abbott Alkaloidal** Company of Chicago and their line of sera and bacterins. On page 10 appears a notice of a most excellent toilet article, **Pyroline.**

Read our advertisements carefully, each month. You will find it to your interest.

THE
JAMES H. BARRY COMPANY
Incorporated

THE STAR PRESS

Printers and Publishers

Book Binding,
Designing,
Photo Engraving

We print.......
The Pacific Pharmacist

1122-1124 Mission Street, San Francisco

Phone Park 6380

An Important Court Decision.

For the past five years, the Horlick's Malted Milk Company have contested a suit brought against them by the Borden's Condensed Milk Company, wherein this concern attempted to restrict the Horlick's Malted Milk Company from claiming and advertising their product as the Original and Only Genuine Malted Milk. A decision has just been rendered, and the final hearing on the bill gives the Horlick people the right to the claim they have always made, that Horlick's is the Original and Only Genuine.

Many have attempted to reproduce and copy as closely as possible, the Horlick style of advertising, and the manner of putting up their packages. This decision, therefore, is of considerable interest to both the trade and the public, inasmuch as Horlick's Malted Milk has become a standard of quality, as well as a household name.

One day in a crowded New York car—mostly all women—a man gave up his seat in due and ancient form, whereat the pretty maiden exclaimed, "You're a jewel." "No madam," cried the man, "I'm a jeweler. I set jewels." The incident is now famous among the wise in Gotham.

MR. WALRUS SAYS
Walrus Manufacturing Company
Walrus Soda Fountains
Sell Best Because They Are Best

WALRUS MANUFACTURING COMPANY
Main Office and Factories, DECATUR, ILLINOIS

Largest Builders and Distributers of Soda Fountains Through Jobbers
Distributers in all principal cities

Send for Catalogs

Carbonators Ice Cream Cabinets Metal Furniture
Soda Fountains

Advertise! You Shrimp, Advertise!

You often used to hear 'em say
That "advertising doesn't pay,"
But now they vote a booby prize
To him that doth not Advertise!

In auto-times, he'll surely fail
Who hitches on behind a snail:—
And that's about the selling-size
Of him that doth not Advertise!

Good goods alone don't go for much
Until they're recognized as such:—
The kind of goods the Public buys
Are those the makers Advertise!

Of all who wooed the Fickle Dame
How many now are known to Fame?—
The smallest Schoolboy promptly cries:
"All them that learned to Advertise!"

Who will not, cannot, see this Truth
Will die unknown in early youth;
Above his grave, they'll write: "Here lies
A Boob Who Would Not Advertise!"

No one can carry in his head
All everyone has ever said:—
You've got to print it or it dies:—
So take the hunch and Advertise!

—C. Henry.

Langley & Michaels Company have just published a special **Hot Drink Supply Catalogue** which will be found very useful by druggists who have Soda Fountains. The booklet is strictly up-to-date, liberally illustrated, contains the latest combination offers and may be had free for the asking. If you have not received your copy do not fail to send for it.

Pyroline.

Pyroline is rapidly coming to the front as a prophylactic and antiseptic for diseases of the mouth, throat and nose. It is an excellent soothing and healing application in all skin abrasions.

It is prepared by a physician and dental surgeon who has made a special study of the diseases of the mouth and nasal cavities. It is used extensively by the dentist as a superior remedy for **PYORRHEA** and diseases of the gums. It is an ideal antiseptic after extraction and other operative work.

Pyroline is an ideal preparation. It is free from all opacity and precipitants and has a most refreshing flavor and aroma. The pharmacists can unhesitatingly recommend it to their patrons as a superior ethical California product.

Pleased to Have Him.

Young Fresher (at Gray Fork, arrayed in flannel suit)—The cows are pretty thick around here, are they not?

Farmer Meadowgrass—They be, young man. I'm glad you've come.

Examine Your Stock

of

Mulford

Antitoxins

Bacterins

Vaccines

and send your order to complete assortment

AT ONCE

The demand for Antitoxins, Bacterins, and Vaccines is most active in the fall and early winter months. Don't be caught short of stock. We have up-to-date literature to help you take full advantage of our advertising and sales work. We are believers in cooperation. GET YOUR SHARE of the biological business.

Our special proposition is well worth writing for

H. K. MULFORD COMPANY

Pharmaceutical and Biological Chemists

PHILADELPHIA

New York
St. Louis
Kansas City
New Orleans
Chicago
Atlanta
Toronto
Seattle
San Francisco
Minneapolis

California College of Pharmacy

Department of Pharmacy, University of California

(Incorporated 1872. Affiliated with the University of California 1873)

Laboratories

Chemistry **Botany and Pharmacognosy** **Pharmacy**

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Faculty

F. T. GREEN, Ph. G., Professor of Chemistry, Director of the Chemical Laboratory, and Dean.

ALBERT SCHNEIDER, M. D., Ph. D., Professor of Economic Botany, Pharmacognosy and Bacteriology.

HENRY B. CAREY, B. S., M. D., Professor of Botany, Materia Medica and Physiology.

F. W. NISH, Ph. G., Phar. B., Professor of Pharmacy and Director of the Pharmaceutical Laboratory.

H. M. SIMMONS, Ph. G., M. D., Associate Professor of Pharmacy and Materia Medica and Lecturer on Toxicology.

H. R. WILEY, LL. B., Lecturer on Pharmaceutical Jurisprudence.

JAMES N. PATTERSON, Ph. C., Phar. B., Assistant in the Chemical Laboratories.

ARTHUR REUM, Ph. G., Assistant in Pharmacognosy and Bacteriology.

R. A. LEET, VAL SCHMIDT and FRANKLIN C. SMITH, Lecturers on the Business Side of Pharmacy.

Admission—Two years of high school work or its equivalent are required to enter upon the regular college course (Ph. C. degree).

Degrees—Pharmaceutical Chemist (Ph. C.) on completion of the two years' course. Bachelor of Pharmacy (Phar. B.) on completion of the three years' course.

NEXT TERM WILL OPEN SEPTEMBER 5, 1914.

Course in Drug and Food Analysis

Open to graduates and others who are properly qualified. The course is intended to prepare the candidate sufficiently to make chemical and microscopical examinations of drugs, drug products and foods in compliance with the Federal and State pure food and drug laws. Drug assaying and other chemical work, the microscopical examination of drugs, spices and food products, and the bacteriological testing of pharmaceutical preparations, water, milk, etc., are among the subjects taught. Those who complete the course are qualified to do work in food and drug laboratories.

The next course will begin September 11, 1914, and end April 30, 1915.

For further information, address FRANK T. GREEN, Dean.

CALIFORNIA COLLEGE OF PHARMACY,
Affiliated Colleges, San Francisco.

Founded 1818

Powers-Weightman-Rosengarten Co.

MANUFACTURING CHEMISTS

New York PHILADELPHIA St. Louis

QUININE SULPHATE MORPHINE SULPHATE CODEINE

Strychnine Iodoform Strontium Bromide Thymol Iodide
Bismuth Subnitrate Iodine Resublimed Ether Nitrous Concentrated
White, Bulky, Tasteless Potassium Iodide In Hermetically Sealed Glass Tubes

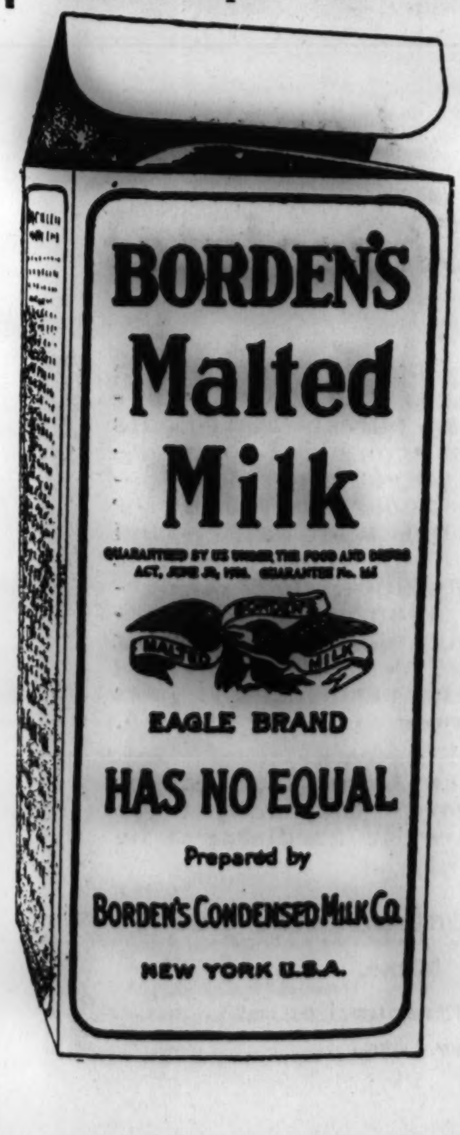
ETHER, U. S. P., FOR ANAESTHESIA

COMPLETE LIST ON REQUEST

SPECIFY P-W-R ORIGINAL PACKAGES

This Reduction in Price Means Profit for You

Take advantage of this opportunity to increase your bank account on Malted Milk! The high quality of our food remains the same; the size of our packages has not been changed; but on April 15th we reduced the price of [redacted]



BORDEN'S Malted Milk

IN THE SQUARE PACKAGE

Small Size	$ 3.75 doz.
Large Size	$ 7.50 doz.
Hospital Size	$31.50 doz.

5% in $12. lots
10% in $48. lots

10 lb. tins (equals 2 Hospital) each $3.50 net
25 lb. tins (equals 5 Hospital) each $7.50 net

ORDER TODAY

Malted Milk Department

BORDEN'S CONDENSED MILK CO.

New York

PHARMACEUTICAL BACTERIOLOGY

With special reference to DISINFECTION and STERILIZATION

By ALBERT SCHNEIDER, M. D., Ph. D. (Columbia University)., *Professor of Pharmacognosy, Histology, and Bacteriology, California College of Pharmacy; Pharmacognosist, U. S. Department of Agriculture.*

"The book in general is well written, well illustrated, and will be useful for the people for whom it is particularly designed."—*Science.*

"The publication of Dr. Schneider's book is one of the evidences of the high degree of excellence to which the profession of pharmacy is advancing. . . . The advance of science has introduced the vaccines into extensive use and it becomes the duty of the pharmacist to keep pace with the growth of medicine."—*Journal of the American Medical Association.*

"The time has long been ripe for the production of such a book, and pharmacists, consequently, owe a debt of gratitude to the author who has been thoughtful enough to treat the subject from this point of view. The recent growth and development of the professional side of pharmacy is responsible for many additions to the list of our text-books, and this volume constitutes a record in its way."—*Pharmaceutical Journal and Pharmacist.*

OCTAVO. CLOTH. 86 ILLUSTRATIONS. PRICE, $2.00 POSTPAID.

P. BLAKISTON'S SON & CO., Publishers

1012 Walnut Street PHILADELPHIA

American Medico-Pharmaceutical League.

Sixteenth year. First Medical Society in America to cooperate with pharmacists. Membership dues, $2 per annum. All reputable physicians, dentists and pharmacists are eligible. Eugenie R. Eliscu, M. D., treasurer, New York City; Samuel F. Brothers, Ph. G., M. D., executive member and corresponding secretary, 96 New Jersey Avenue, Brooklyn, N. Y.

"I would have you to know, sir, we came over with William the Conqueror."

"It must have been some kind of a conqueror who could make you come over with anything."—Baltimore American.

Crown Headache Powders

Trade Mark Washington, D. C.

TRADE MARK

Registered Sacramento, Cal.

QUICK SELLER and GOOD PROFIT

Ask your Jobbers for Special Prices on ½-Gross Quantity with Free Goods. 10 cent and 25 cent sizes

F. A. WECK, Manufacturing Pharmacist
San Francisco, Cal.

A TRADE MAGNET

Since placing Lenox Chocolates on the market their steadily increasing sales have been nothing short of astonishing. Made especially to meet the tremendous demand for a super-quality chocolate confection at popular prices, these toothsome sweets have met with enthusiastic appeal and our national advertising will give this demand a mighty impetus. There's a liberal profit in carrying this line. The general satisfaction it gives and the good will it creates are almost priceless. Yes, sir, it's an indication of the high policy of your store to carry in stock a generous assortment of the confection par excellence—

Trade Mark REG. U.S. PAT. OFF. Necco Sweets New England Confectionery Co. Boston

Lenox Chocolates

Made by America's largest candy makers in a modern factory where the best equipment, ideal cleanliness, purest ingredients and contented workers combine to make Lenox Chocolates the purest and most delicious confection sold under any name or label. Put up in pound and half pound packages which contain an almost endless succession of tempting jellies, nougat, caramels, fruit and soft, creamy centers, covered by a rich coating of just the right chocolate strength. The very attractiveness of the box itself and the assuring goodness inside will draw new trade and hold the old. And it's a sure repeater.

Order Lenox Chocolates from your jobber today and get the cream of the candy trade in your community, or write us direct if he does not carry them.

New England Confectionery Co.
Boston, Mass.
Makers of the famous line of
Necco Sweets.

OVER 65 YEARS' EXPERIENCE

PATENTS

TRADE MARKS
DESIGNS
COPYRIGHTS &C.

Anyone sending a sketch and description may quickly ascertain our opinion free whether an invention is probably patentable. Communications strictly confidential. HANDBOOK on Patents sent free. Oldest agency for securing patents.

Patents taken through Munn & Co. receive *special notice*, without charge, in the

Scientific American.

A handsomely illustrated weekly. Largest circulation of any scientific journal. Terms, $3 a year; four months, $1. Sold by all newsdealers.

MUNN & Co. 361 Broadway, New York
Branch Office, 625 F St., Washington, D. C.

Drug Store Exchange

Drug Store, good location—elegant fixtures for sale under cost, or will consider an exchange for a good drug business in the country. Owner anxious to get out of city.

Drug Store, San Francisco, good business corner; clean stock. Owner must sell on account of ill health.

Drug Store, San Francisco—A nice business, well located, clean stock; will stand investigation.

Apply F. A. WECK, P. P.,
50 Third Ave. (Richmond Dist.),
San Francisco, Cal.

Inspection of Water-Supply.

Let me for a moment note the fact that we have a most thorough inspection of the milk-supply, of our meat-supply, of food adulterations, but in how many communities in this country have we properly protected not only the inhabitants, but the stranger and traveler from infection by preventing the drinking of contaminated water from pumps and wells? You ask the average farmer or average person what he thinks about the water in the well on his premises and he will invariably tell you that the water is pure, clear and sparkling; and yet how many of these wells may not be contaminated with pathogenic germs? The inspection of many other things is no reason why a most thorough inspection should not be made of the wells, lakes, rivers and streams that all water supply not only in the cities but in the farming districts should be guarded. The state or county should order a most thorough control, and a periodical examination should be made and an official notice posted at all sources of water supply, stating the condition of the water, whether it is pure or otherwise, whether it is liable to bring about a disturbance of the gastro-intestinal tract or not.—Francis E. Fronczak, in American Journal of Public Health.

WRITE FOR SPECIAL PROPOSITION
ON
DR. DANIELS' MEDICINES
FOR
HORSES, CATTLE, SHEEP
SWINE, DOGS AND CATS

Best Advertised, Best Sellers, Good Profit
Satisfaction Guaranteed

DR. A. C. DANIELS, Inc., 172 Milk Street, Boston, Mass.

A. T. ROCHE & CO., San Francisco, Cal.
Agents for Pacific Coast

We want the name of every young man who is ambitious to

BE A LAWYER

and we want to hear from every business man who wishes that he knew BUSINESS LAW.

Write today and let us tell you how we have made lawyers out of hundreds of young men just like you, and equipped business men with a legal training that has been of immense benefit to them. This School, founded 22 years ago, has graduates who have passed bar examinations in every state in the U. S. Courses endorsed by Bench, Bar, and Business men.

STUDY LAW AT HOME

Learn about (1) our Complete College Law Course which fits for practice, and (2) our Complete, Practical, Business Law Course for Business Men. Find out about the low cost, and see how easily you can obtain a thorough knowledge of the Law while continuing your present work. Easy Terms!

Send today for handsome catalog and list of successful graduates all over the U. S. who grasped their opportunity by once answering an ad. like this!

THE SPRAGUE CORRESPONDENCE SCHOOL OF LAW
401 American Building, Detroit, Mich.

Compulsory Cleansing of Milk Receptacles.

According to the April Bulletin of the Indiana State Board of Health, a law was enacted by the last legislature of that state requiring the cleansing of milk cans, bottles, etc., immediately after the removal of the milk therefrom. A similar law enacted in New York was upheld by the Supreme Court of the state, after being attacked on constitutional grounds. The court held that on account of the danger to be apprehended from the use of unclean receptacles for milk intended for human food, drastic measures to prevent the possibility of such use are reasonable and justified, and that it is clearly within the police power of the state to require dealers to wash bottles before they are refilled. With this precedent the Indiana law will probably not be attacked on constitutional grounds. It is a proper and reasonable regulation.—Journ. A. M. A.

¶To those who have not already bought their holiday line, the display which we are making in our showrooms will be of interest.

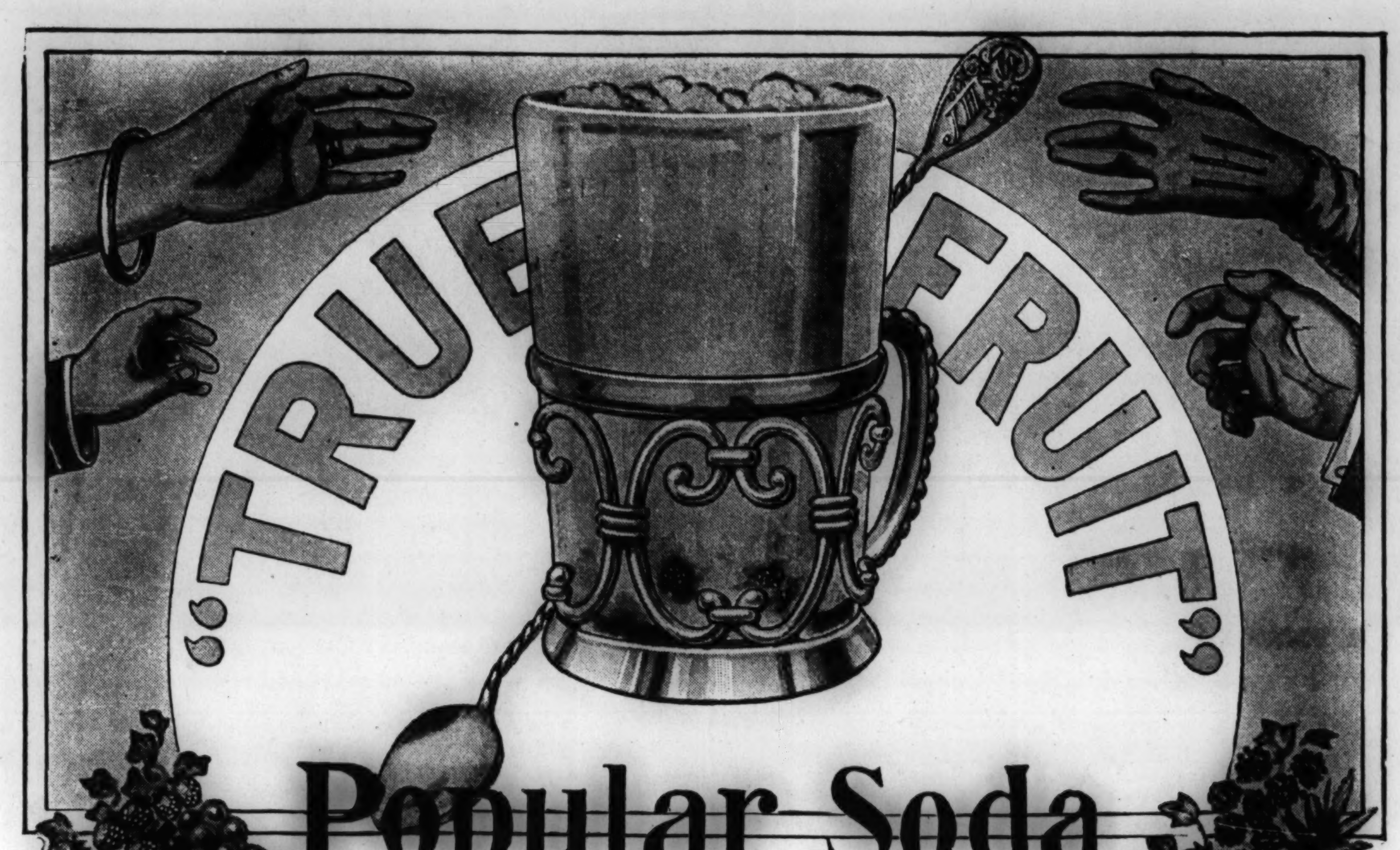
¶The line surpasses anything before attempted in beauty, style and up-to-date features. An inspection of the large variety of articles and patterns in the following lines will be valuable time profitably spent.

¶Among the lines we are showing is an excellent assortment of pieces of PARISIAN IVORY, STERLING CUT GLASS, SILVERED BRONZE, KEWPIE DOLLS, BERNARD RICE'S line of SHAVING SETS and MIRRORS, HENKEL'S line of MANICURE SETS, LADIES' BAGS, LEATHER NOVELTIES, etc., etc.

¶Be prepared to reap the harvest.

COFFIN REDINGTON CO.

35 Second Street San Francisco, Cal.



Popular Soda

Must have Something Back of It
as a Reason for Its Popularity
When

J. Hungerford Smith Company's
"TRUE FRUIT" PRODUCTS

enter into the composition of your Soda, they insure Popularity, for they produce the kind of Soda for which all hands reach out,—the kind that brings the Customer back the second time

These are facts to have in mind when renewing stock for

YOUR SUMMER CAMPAIGN

Or if your Fountain has been closed during the Winter, resolve that you will treat your Customers to Smith Quality Syrups and Fruits this season and make your Fountain so popular that you will not be able to close it next Winter.

FOR THERE IS A DIFFERENCE
AND YOUR TRADE QUICKLY RECOGNIZES IT

NEW YORK OFFICE:
27 East 22d St.
M. J. Root,
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